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## **USAAVLABS TECHNICAL REPORT 66-58**

# CH-54A SKYCRANE HELICOPTER FLIGHT LOADS INVESTIGATION PROGRAM

Engineering Laboratory Report

June 1966

By

Joseph F. Braun F. Joseph Giessler

## TECHNOLOGY INCORPORATED

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Ву

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## **SUMMARY**

The United States Army Aviation Materiel Laboratories, Fort Eustis, Virginia, has conducted a flight loads investigation program for several operational aircraft. The aircraft involved in the program were the OV-1A, CH-47A, UH-1B, and CH-54A. This report deals only with the analysis of the 110.4 hours of CH-54A Skycrane data. Century 409B oscillograph recorders were used to collect the parameters measured, including airspeed, altitude, vertical acceleration at center of gravity, main rotor rpm, longitudinal cyclic stick position, collective stick position, outside air temperature, torque on each engine, and gas producer rpm on each engine. Barometric pressure and takeoff-and-landing gross weight estimates were also recorded as supplemental information. The flight data were divided into four categories by mission: ascent, maneuver, descent, and steady state. The aircraft were performing their normal mission functions during the period in which the data were collected.

Time history tables, histograms, peak counts, and exceedance curves were generated from the data. As a result of this study, designers now have a limited sample of conditions experienced by four CH-54A aircraft in the field.

## **FOREWORD**

The material presented in this report is the result of a joint endeavor by the United States Army Aviation Materiel Laboratories (USAAVLABS), Fort Eustis, Virginia, and Technology Incorporated, Dayton, Ohio. The program was sponsored by the Aeromechanics Division and was performed by the Engineering Laboratories Division of USAAVLABS, and the data were collected and reduced by Technology Incorporated.

The authors express appreciation to Mr. Cyril G. Peckham, Mr. John F. Nash, Mr. Larry E. Clay, Mr. Howard I. Ackerman, Mr. William E. Morrin, and Mr. Ronald I. Rockafellow, all of Technology Incorporated, for their contributions to this report.

Special acknowledgement is given to Dr. R. G. Loewy, who served as consultant to the program.

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## SYMBOLS

	Comp	uter Equivalent
$c_{\mathtt{T}}$	thrust coefficient	. CT
g	acceleration due to gravity, 32.174 ft/sec <sup>2</sup>	
$^{ m h_d}$	density altitude, ft	
$n_{\mathbf{Z}}$	normal load factor, g	. NZ
OAT	outside air temperature, <sup>o</sup> F	
P	atmospheric pressure, inches of mercury	
R	rotor radius = 36.0 ft	
RPM	rotor revolutions per minute	
v	indicated airspeed, ft/sec	
w	gross weight, lb	
$\Delta n_z$	incremental load factor = n <sub>z</sub> - 1.0	
μ	rotor tip speed ratio	. MU
ρ	local atmospheric density, slugs/ft3	
$ ho_{_{\mathbf{O}}}$	sea level density = .0023799 slug/ft <sup>3</sup>	
$\sigma$ .	rotor solidity = 0.08649	. S
Ω	rotor angular velocity, radians/sec	

### INTRODUCTION

The United States Army Aviation Materiel Laboratories (USAAVLABS) is engaged in basic research involving the adequacy of structures of U. S. Army aircraft. It was necessary to begin a flight loads investigation program in order to provide designers with the load spectra experienced by operational aircraft. USAAVLABS conducted this task as an in-house effort for CH-54A aircraft which were performing routine mission assignments in the Fort Benning, Georgia, area.

The operational characteristics of the CH-54A were analyzed in the 110. 4-hour statistical sample of data compiled in this report. Parameters measured included airspeed, altitude, outside air temperature, vertical acceleration at the center of gravity, main rotor rpm, collective stick position, longitudinal cyclic stick position, engine torque of each engine, and gas producer rpm of each engine. Supplementary information for each flight consisted of gross weight estimates, type of mission, and barometric pressure. Airborne oscillographic recorder systems were utilized to obtain the data.

The data from each flight were classified as belonging to one of the following four mission segments: ascent, descent, maneuvering, or steady state. By grouping and correlating the various parameters with the supplemental information collected, it was possible to generate exceedance curves, histograms, and gust spectra to provide preliminary guidelines for aircraft design.

The original goal of 200 flight hours of operational data was not met because the instrumented aircraft were sent to the Republic of Vietnam before the completion of the data-gathering program.

## OBJECTIVES

The primary objectives of this program were:

- 1. To provide a minimum statistical sample of operational data for establishing design criteria for future heavy-lift helicopters.
- 2. To present this information in a convenient form for use by aircraft designers.
- 3. To perform limited preliminary analyses of these results.

## **METHOD**

#### DATA RECORDING

Three CH-54A helicopters were instrumented during the present program. These helicopters were assigned to the 478th Flying Crane Company stationed at Fort Benning, Georgia. Instrumentation began on 25 January 1965, and data recording began on 4 February 1965. The recording was completed on 27 July 1965. A total of 110.38 hours of usable data from 409 flights was recorded on a Century Type 409B oscillograph. A block diagram of the complete instrumentation system is shown in Figure 1. The following parameters were recorded: airspeed, altitude, vertical C.G. acceleration, outside air temperature, main rotor speed, collective stick position, longitudinal cyclic stick position, engine torque (two engines), and gas producer rpm (two engines).

#### DATA PROCESSING

## Data Editing and Reading

The editing and reading of the data presented in this report were done by personnel of the U. S. Army Aviation Materiel Laboratories. In order to explain some of the forms of data presentation, a few editing and reading comments are in order.

The flight records are divided into four mission segments:

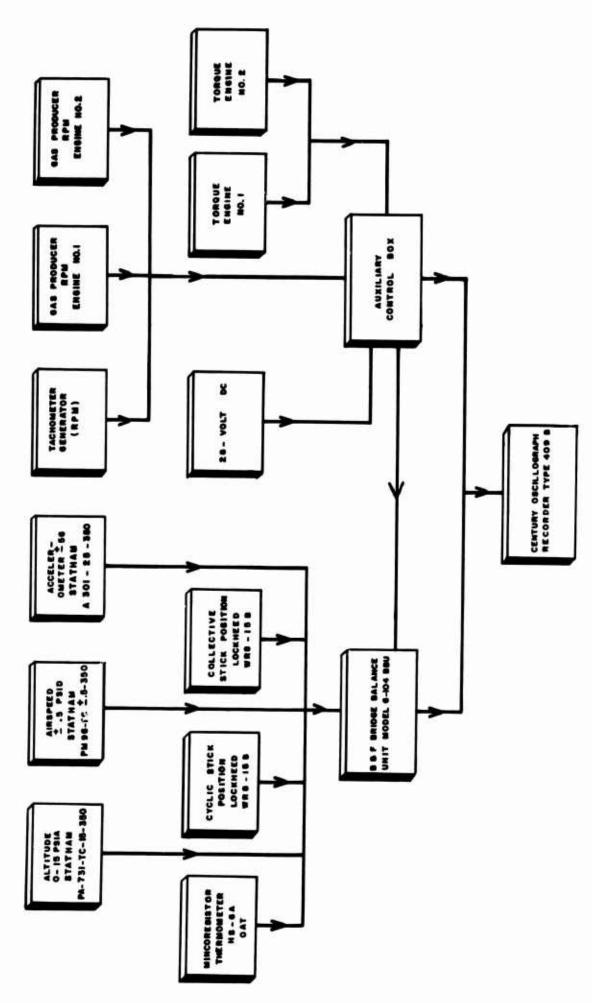
Mission Segment 1 - Takeoff and Ascent

Mission Segment 2 - Maneuver

Mission Segment 3 - Descent, Flare, and Landing

Mission Segment 4 - Steady State.

The first three mission segments are transient flight conditions during which there were no obvious steady values of the stick positions. Mission Segment 1 includes all takeoff times and other times during which the helicopter performed an unsteady ascent. Mission Segment 2 includes all unsteady flights falling in neither Mission Segment 1 nor



CH-54A Data System Block Diagram; Complete Instrumentation System. Figure 1.

Mission Segment 3. Mission Segment 3 includes all landings and all unsteady descents. Mission Segment 4 includes all flight time during which the stick positions were relatively steady and during which the airspeed and altitude were steady or changing smoothly.

The peaks of the normal acceleration, determined from the stick position trace, are identified as either gust-induced or maneuver-induced. If the  $n_z$  peak was preceded by motion of either or both sticks, it was considered to be maneuver-induced. If the peak was not preceded by stick motion, or if the stick motions were not in the correct direction to produce the acceleration observed, the peak was defined as a gust. A peak was determined when the load factor trace rose and fell by 50 percent of the peak value or by 0.2g, whichever was greater. Also, the peak value must be outside the threshold. The threshold for load factor peaks is 0.8 to 1.2g factors.

Peaks of the longitudinal cyclic and collective sticks are also presented. These were defined as a rise or fall of 10 percent of full-stick travel with the peak at least 10 percent above or below the normal values. The normal stick positions for steady state were the actual normal positions observed; those for the transient section were specified for each aircraft.

Time histories of the recorded parameters were retained only during the steady-state portion of the flight. During the transient portions, only the peak values were recorded, with no time history maintained.

## Quality Control

The data presented in this report were edited, read, and quality-checked by the U. S. Army Aviation Materiel Laboratories, and each record was rechecked in the Quality Control Section at Technology Incorporated. The mean deviations and standard deviations were computed from the sample points obtained during the quality control check. If the reading errors are assumed to be normally distributed, then plus or minus three standard deviations from the true values should include 99.7 percent of the readings. The mean deviation and three standard deviations are shown in Table I for each parameter.

TABLE I Quality Control Values for Each Parameter

Parameter	Mean Deviation	Three Standard Deviations
Airspeed, kn*	2	±2.0
Altitude, ft**	-4.5	±57
n <sub>z</sub> , g	0008	±.06
Rotor rpm	2	±2.4
Long. cyclic stick, pct	02	±4.3
Collective stick, pct	02	± 3. 1

#### Data Computations

The data obtained from the reading of the flight records were used in the preparation of most figures and tables. However, certain derived parameters indicative of helicopter performance were calculated from the data and are also presented in this report.

The normal load factor, nz, was reduced to an incremental normal load factor,  $\Delta n_z$ , for ease in presenting both positive and negative peaks, using the relation

$$\Delta n_z = n_z - 1.0. \tag{1}$$

In order to provide a means of comparing helicopter performance data, the density altitude, hd, was calculated from the static pressure and the outside air temperature, OAT, from the relation

$$h_d = 145,300 \left[ 1 - \left( \frac{518.4 \text{ P}}{29.92 \text{ OAT} + 13,745.2} \right)^{0.235} \right],$$
 (2)

where P = atmospheric pressure, inches of mercury.

Two nondimensional parameters were also calculated. The rotor tip speed ratio was determined from the relation

$$\mu = \frac{V}{\Omega R} , \qquad (3)$$

which for the CH-54A reduced to

$$\mu = 0.4477 \frac{V}{RPM} , \qquad (4)$$

where

V = indicated airspeed in knots.

 $\Omega$  = rotor angular velocity in radians per second.

R = rotor radius, 36.0 feet.

RPM = rotor revolutions per minute.

The threst coefficient divided by the rotor solidity  $\frac{C_T}{\sigma}$  was calculated from the relation

$$\frac{C_T}{\sigma} = .0001998 \frac{W}{(RPM)^2 (\rho)}, \qquad (5)$$

where

W = gross weight in pounds.

RPM = rotor revolutions per minute.

 $\sigma = \text{rotor solidity}, 0.08649.$ 

 $\rho$  = local atmospheric density.

#### RESULTS

### DATA PRESENTATION

The 110.38 hours of usable recorded data were obtained from 409 flights and 200 engine starts.

The data are presented as a set of time history tables, histograms, peak counts, and exceedance curves. The time history tables and histograms show the flight time spent in various ranges of one parameter versus flight time spent in ranges of a second parameter. Certain tables have also been broken down into ranges of a third or fourth parameter which remains constant for any particular sub-table. The times shown are steady-state times except Table II, which indicates total time (see the appendix). The peak count tables present the number of peaks of one parameter within given ranges which also fall within ranges of a second parameter. The ranges of a third or fourth parameter may also be used to modify certain tables.

Figure 2 shows the percentages of total recorded time in each mission. The small percentage of time spent in the maneuver segment is representative of a large helicopter. Figures 3(a) through 3(f) show the time spent in each mission segment by gross weight ranges. These plots are very similar, which would indicate that gross weight has very little, if any, influence on the distribution of time among the mission segments.

Parameters directly related to engine performance, that is, torque and gas producer rpm, were not tabulated for this report.

Time in the gross weight ranges is shown in Figure 4. Over one-third of the steady-state time was recorded between 26,000 and 30,000 pounds. The time at weights above 42,000 pounds came primarily from demonstration flights. A maximum weight of 46,222 pounds was recorded, consisting of a payload of 72 troops at approximately 200 pounds per man and a 3,600-pound troop-and-cargo van.

The percentage of steady-state time spent in altitude ranges is shown in Figure 5. The helicopter was operated at low density altitudes, with only 3-1/2 percent of the time spent above a 5,000-foot density altitude.

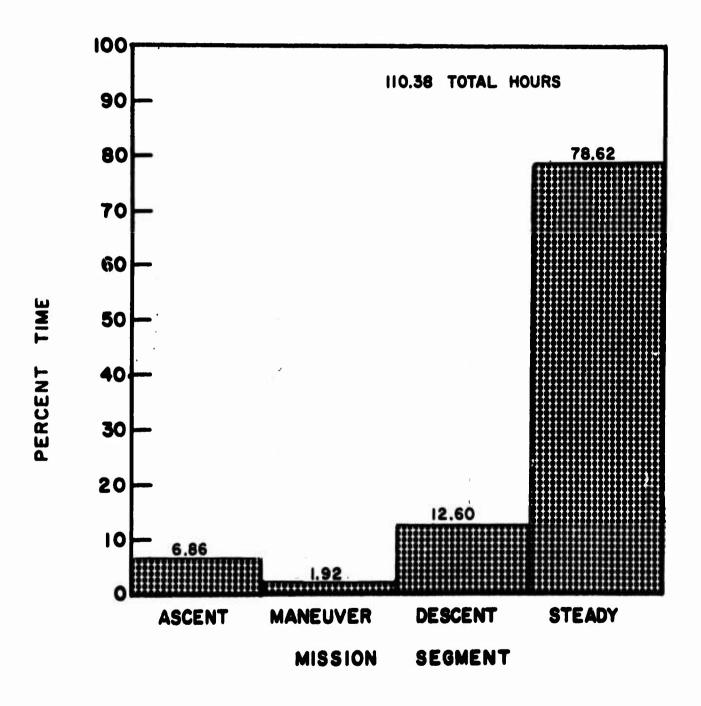
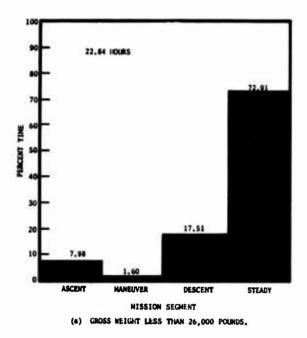
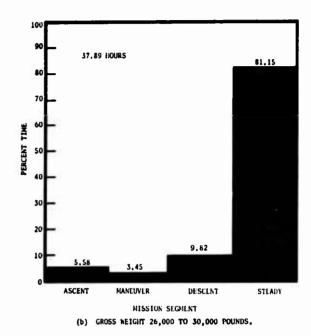


Figure 2. Percentage of Total Flight Time in Each Mission Segment.





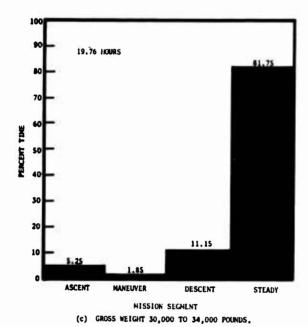
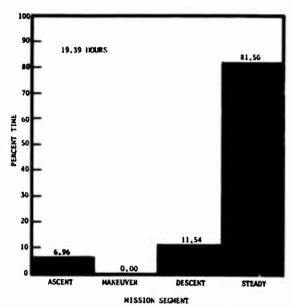
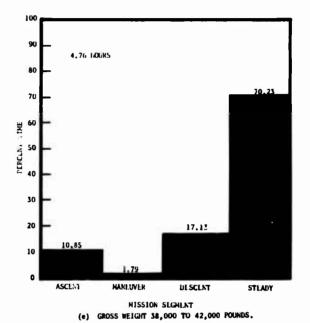


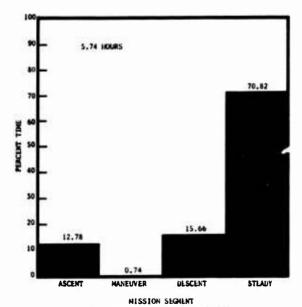
Figure 3. Time in Each Gross Weight Range Broken Down by Percentage in Each Mission Segment.





(d) GROSS WEIGHT 34,000 TO 38,000 POUNDS.

,



(f) GROSS NEIGHT OVER 42,000 POUNDS.

Figure 3, contd.

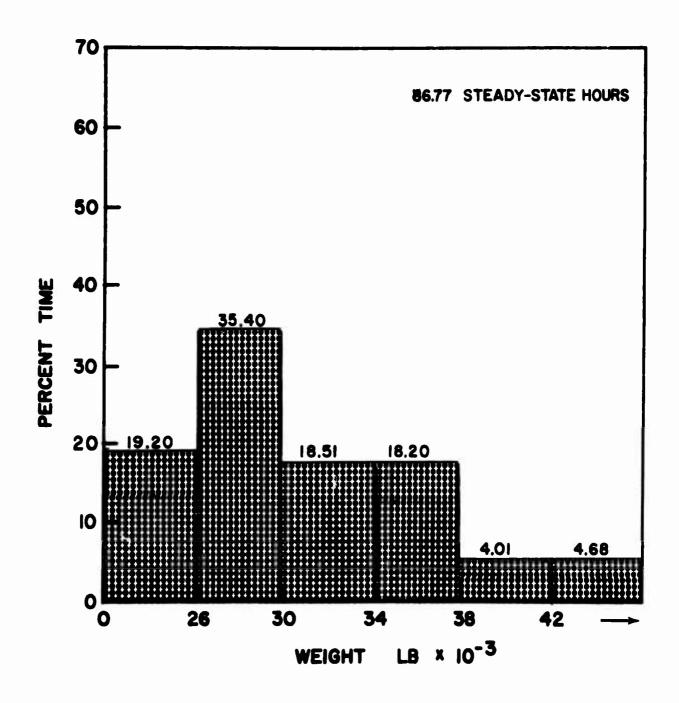


Figure 4. Percentage of Steady-State Mission Segment Flight Time in Each Gross Weight Range.

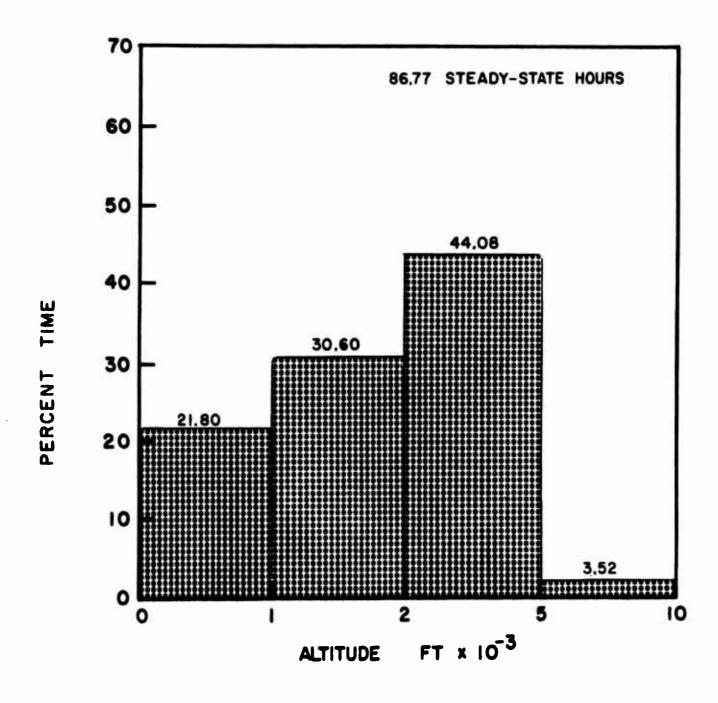


Figure 5. Percentage of Steady-State Mission Segment Flight Time in Each Density Altitude Range.

The rotor rpm was between 180 and 195 for more than 99 percent of the time, with over 50 percent of the steady-state time between 185 and 190 rpm, as shown in Figure 6. The small amount of time spent below 180 rpm was logged during training flights which included one-engine-out landings. This maneuver is discussed in connection with Figure 24.

The outside air temperature never dropped below 30°F. More than 50 percent of the time, the temperature was between 60° and 80°F, as shown in Figure 7.

Rate of climb during steady state was between -300 and +300 feet per minute more than 90 percent of the time, as shown in Figure 8. Small periods of time were recorded down to 1,200 feet per minute and above 1,500 feet per minute. It should be noted, however, that large values of rate of climb which normally occur during transient flight are not included in this report data.

The percentages of steady-state flight time within airspeed ranges are shown in Figures 9 through 15. The complete time is shown in Figure 9 and is then broken down by altitude within weight ranges in Figures 10 through 15. The large percentage of time below 40 knots is the result of hover time spent in picking up and setting off cargo and in performing functions peculiar to the crane operation. Cruise airspeed appears to be between 80 and 110 knots. The maximum airspeed of this aircraft is 120 knots; however, a small percentage of time was recorded above 120 knots. A maximum airspeed of 131 knots occurred in high-speed runs during check flights. The breakdown by gross weight ranges shows that the high airspeeds are achieved at the higher density altitudes and at the lower gross weights. No airspeeds above 110 knots were recorded at weights over 38,000 pounds at density altitudes above 1,000 feet. Very little time was spent at altitudes above 5,000 feet at gross weights over 34,000 pourds.

Exceedance curves for both positive and negative incremental maneuver normal load factor peaks are presented in Figures 16(a) through 16(d), Figures 17(a) through 17(f), and Figure 18. Figure 16 shows these curves broken down by mission segments. The maneuver mission segment is the most severe; however, only 2. 16 hours of data are represented. The breakdown by gross weight ranges is shown in Figure 17. The exceedance curves are very similar for all the weight ranges.

The highest values of incremental normal load factor occurred at gross weights between 26,000 and 34,000 pounds. The composite curve is shown in Figure 18. The highest maneuver load factor peak was 1.57, which occurred during the maneuver mission segment and at a gross weight of 26,000 pounds.

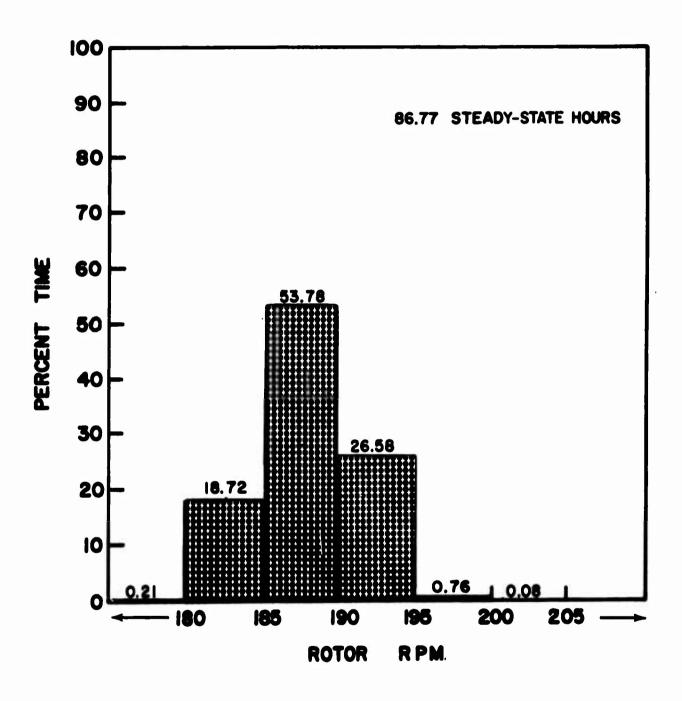


Figure 6. Percentage of Steady-State Mission Segment Flight Time in Each Rotor RPM Range.

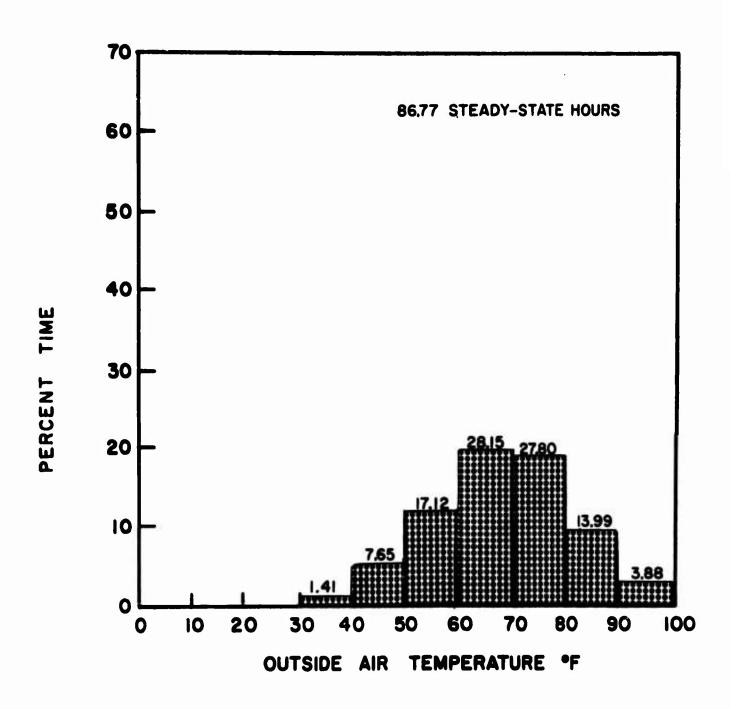


Figure 7. Percentage of Steady-State Mission Segment Flight Time in Each Outside Air Temperature Range.

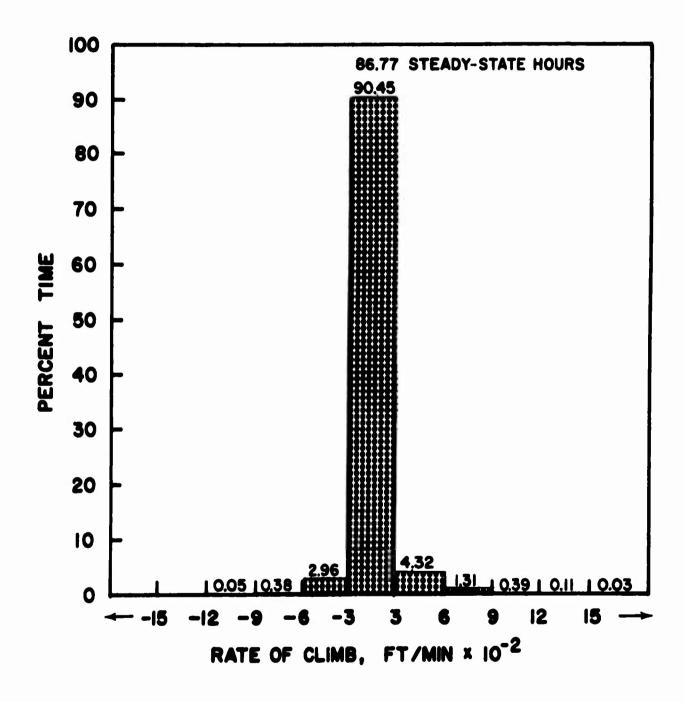


Figure 8. Percentage of Steady-State Mission Segment Flight Time in Each Rate of Climb Range.

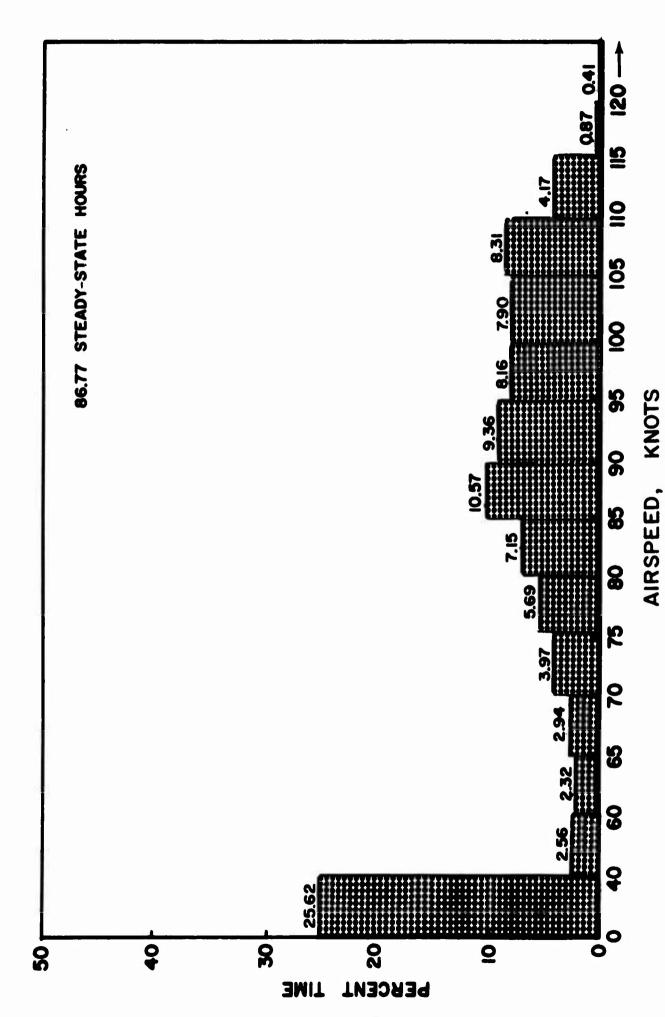


Figure 9. Percentage of Steady-State Mission Segment Flight Time in Each Airspeed Range.

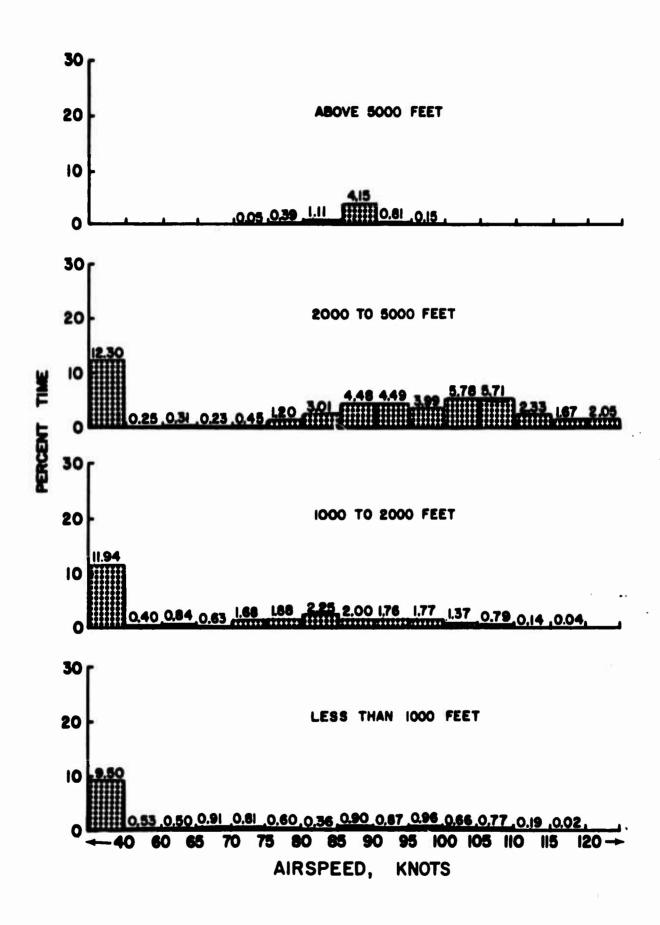


Figure 10. Time in Steady-State Mission Segment in Less-Than-26,000-Pound Gross Weight Range Broken Down by Percentage in Each Density Altitude-Airspeed Range.

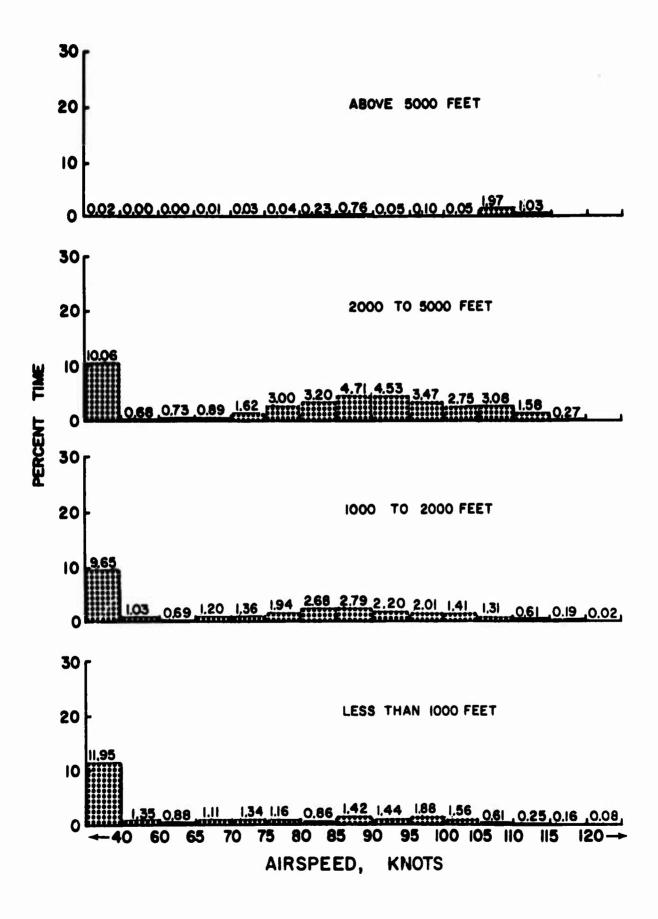


Figure 11. Time in Steady-State Mission Segment in 26,000-to-30,000-Pound Gross Weight Range Broken Down by Percentage in Each Density Altitude-Airspeed Range.

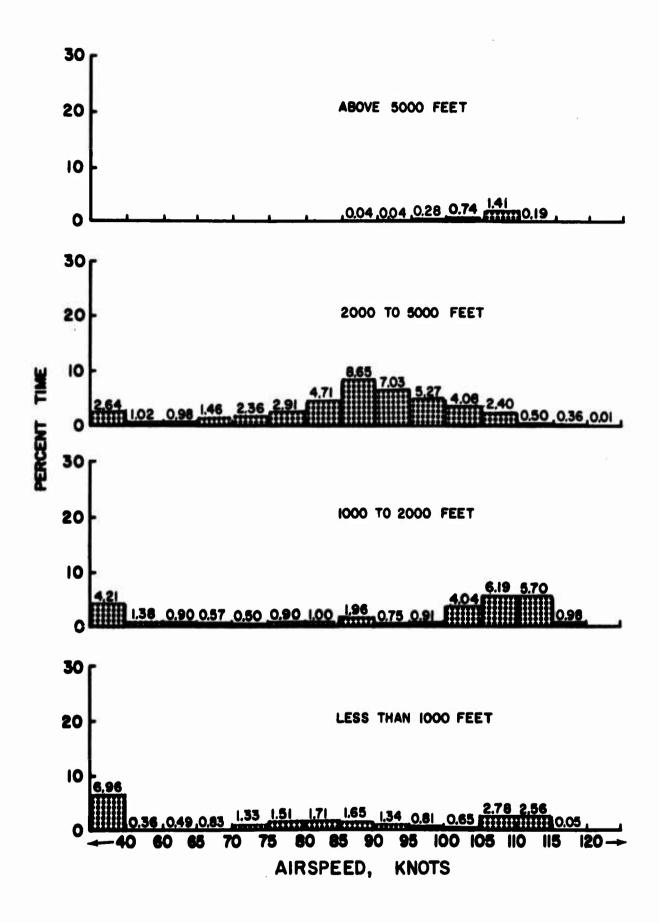


Figure 12. Time in Steady-State Mission Segment in 30,000-to-34,000-Pound Gross Weight Range Broken Down by Percentage in Each Density Altitude-Airspeed Range.

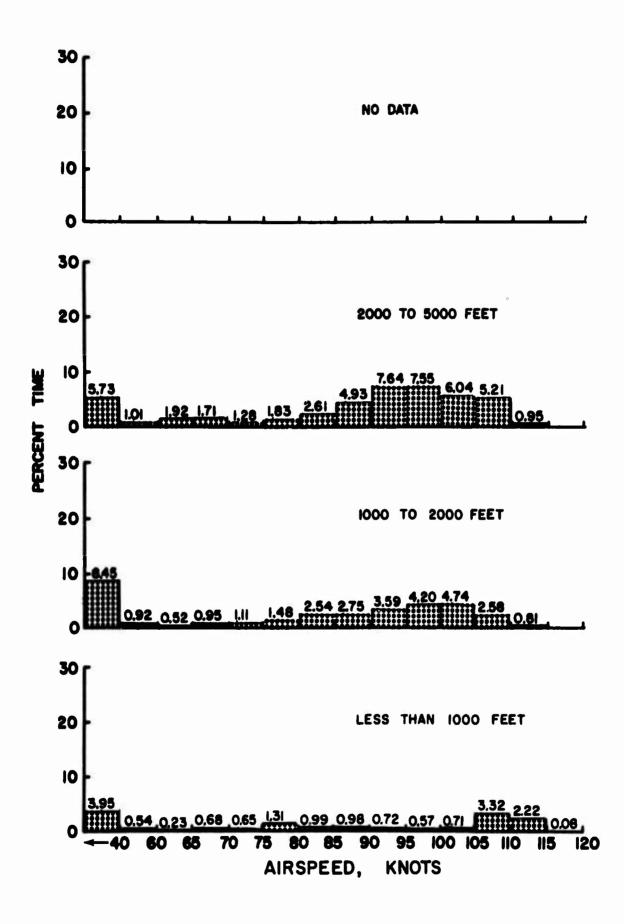


Figure 13. Time in Steady-State Mission Segment in 34,000-to-38,000-Pound Gross Weight Range Broken Down by Percentage in Each Density Altitude-Airspeed Range.

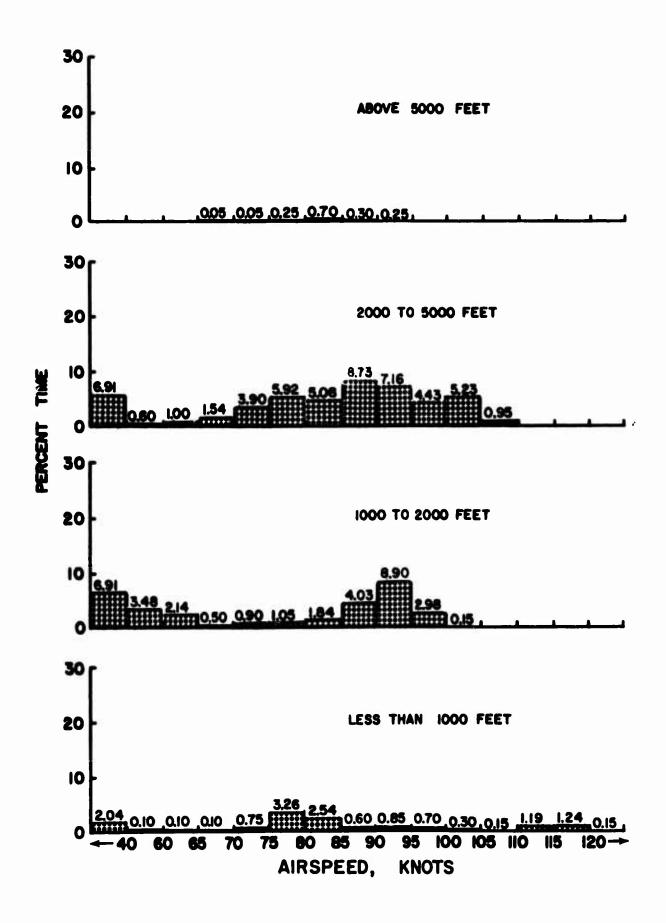


Figure 14. Time in Steady-State Mission Segment in 38,000-to-42,000-Pound Gross Weight Range Broken Down by Percentage in Each Density Altitude-Airspeed Range.

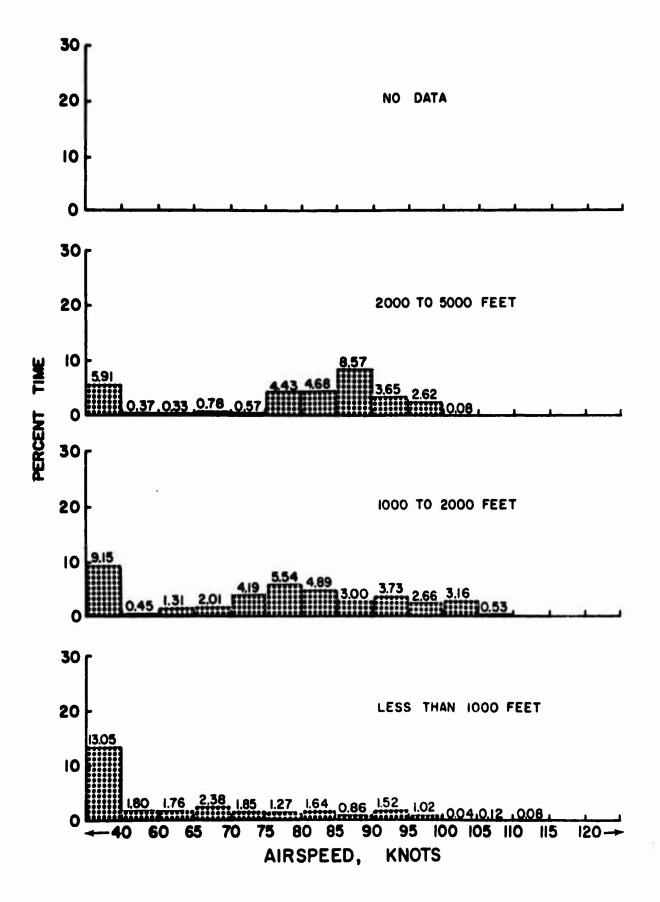


Figure 15. Time in Steady-State Mission Segment in Over-42,000-Pound Gross Weight Range Broken Down by Percentage in Each Density Altitude-Airspeed Range.

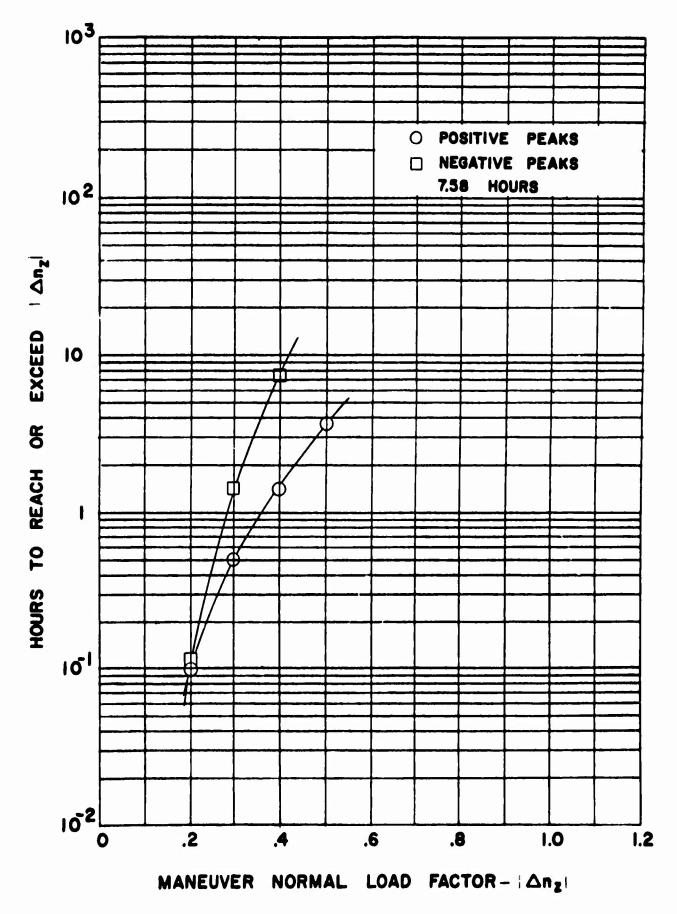


Figure 16. Exceedance Curves for Incremental Maneuver Normal Load Factor Peaks by Mission Segment.

(a) Ascent Mission Segment

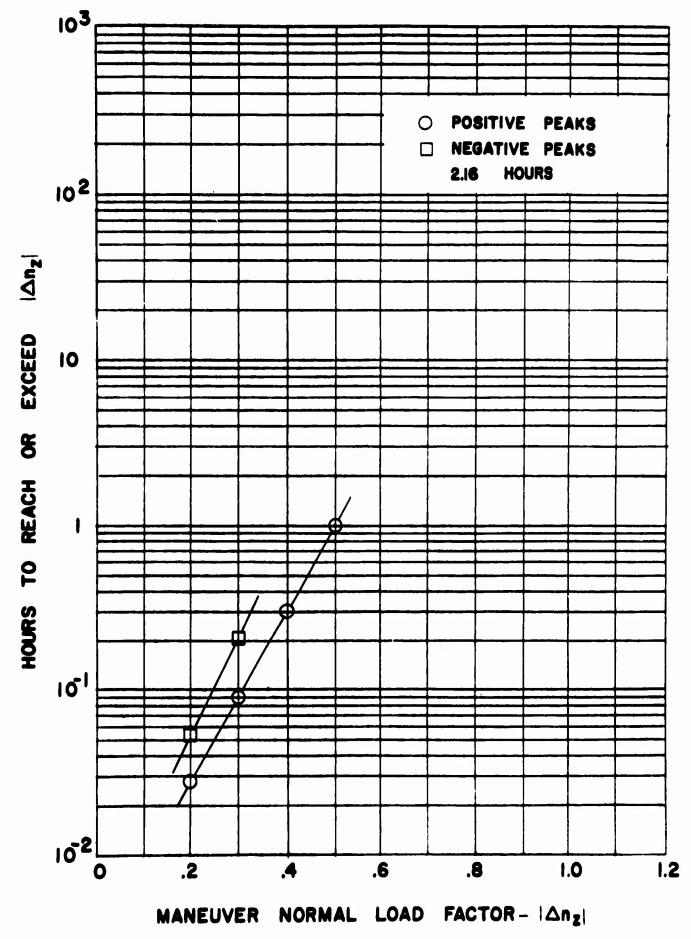


Figure 16. (b) Maneuver Mission Segment.

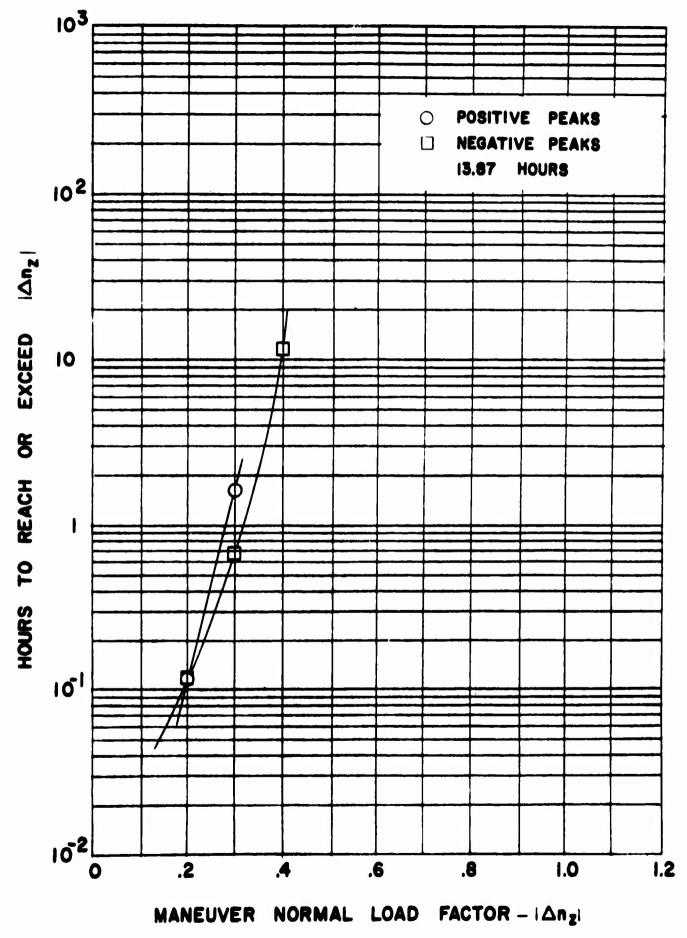


Figure 16. (c) Descent Mission Segment.

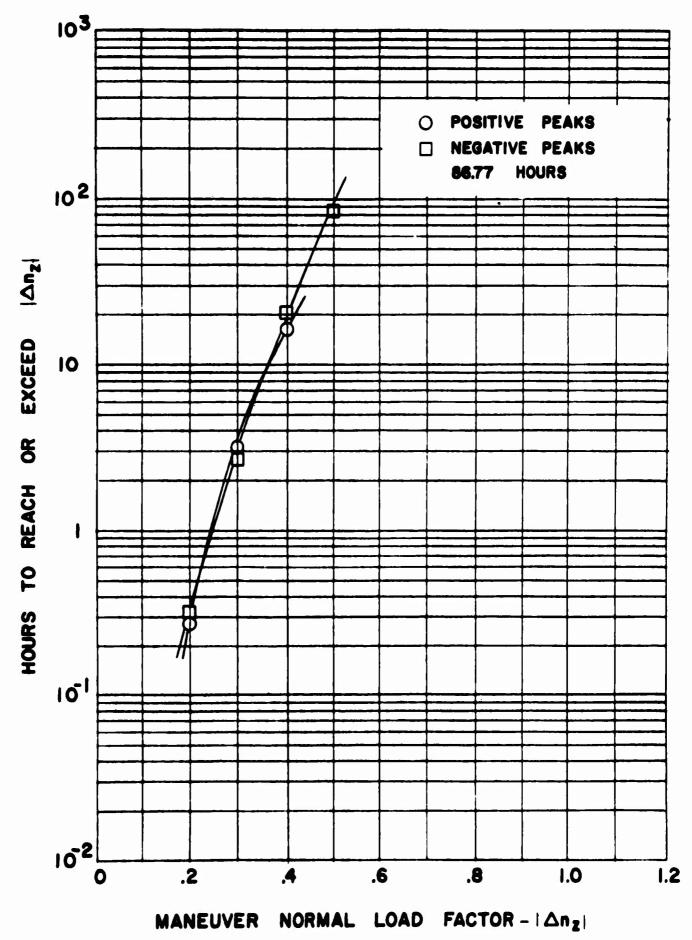


Figure 16. (d) Steady-State Mission Segment.

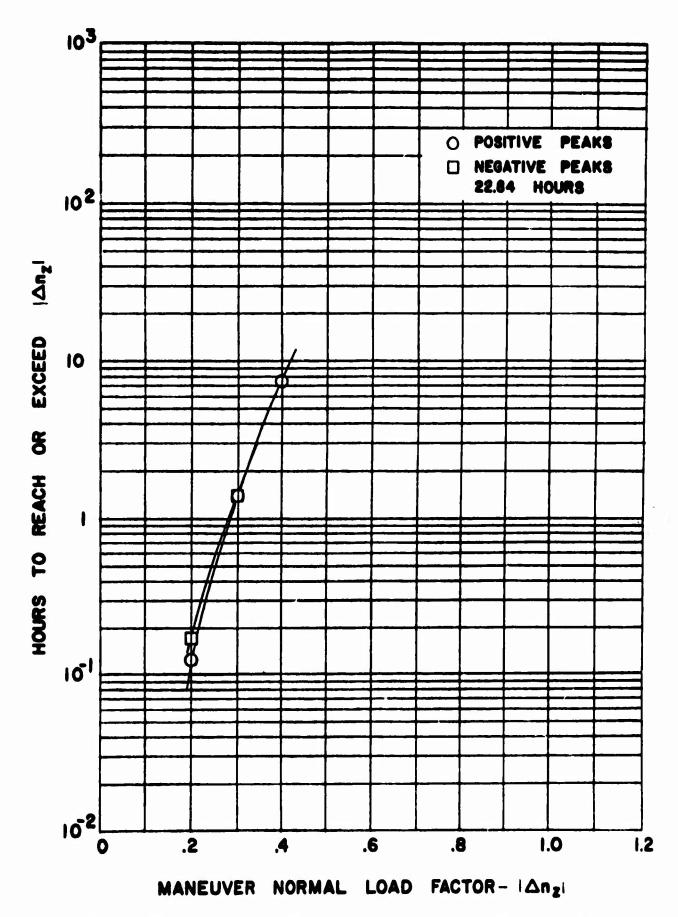


Figure 17. Exceedance Curves for Incremental Maneuver Normal Load Factor Peaks by Gross Weight Ranges.

(a) Gross Weight Less Than 26,000 Pounds.

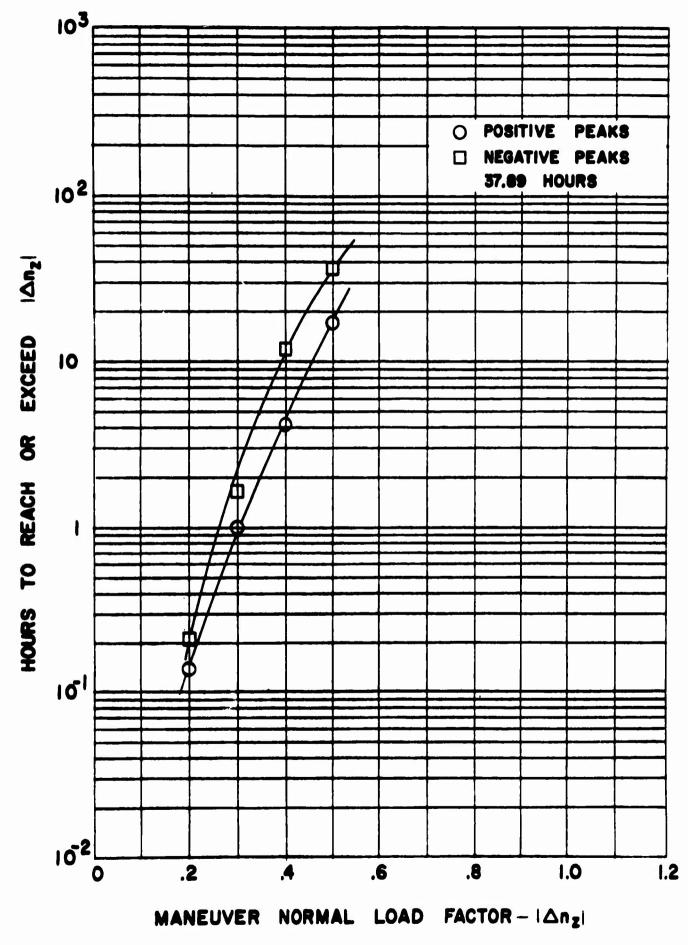


Figure 17. (b) Gross Weight 26,000 to 30,000 Pounds.

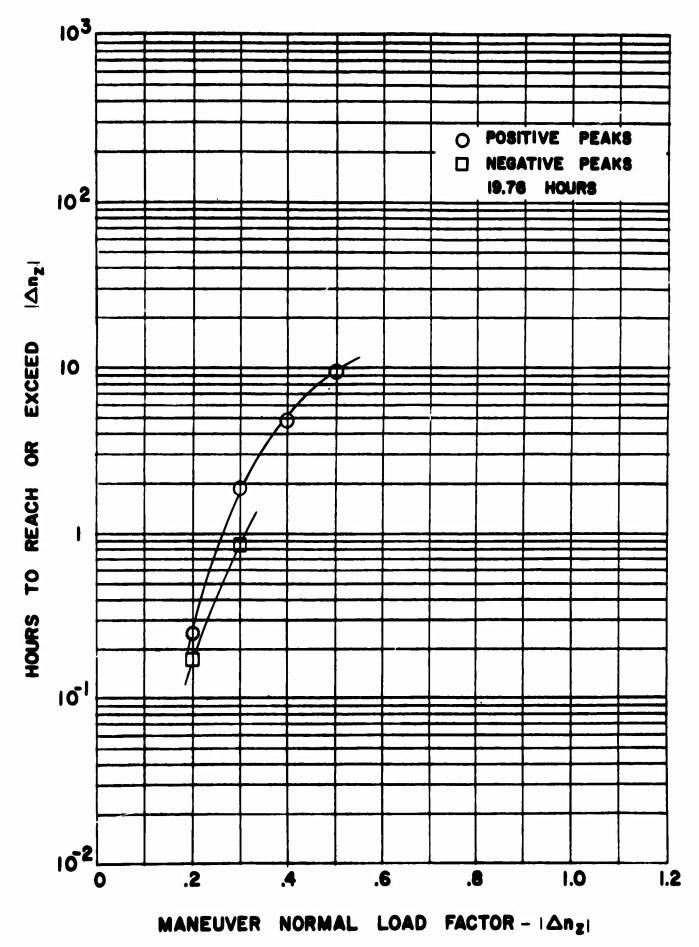


Figure 17. (c) Gross Weight 30,000 to 34,000 Pounds.

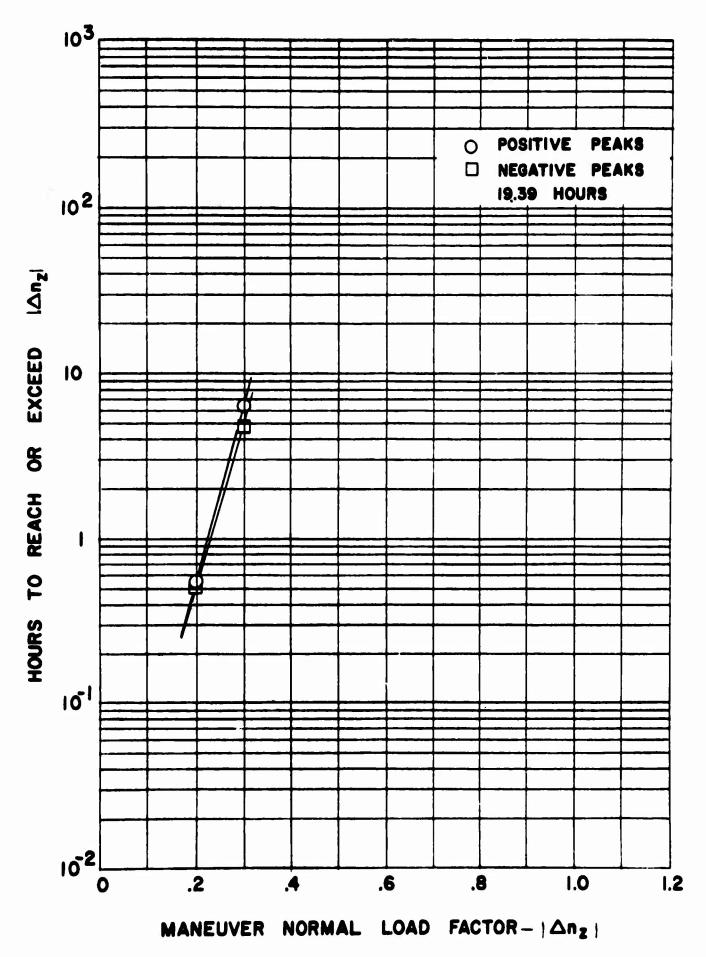


Figure 17. (d) Gross Weight 34,000 to 38,000 Pounds.

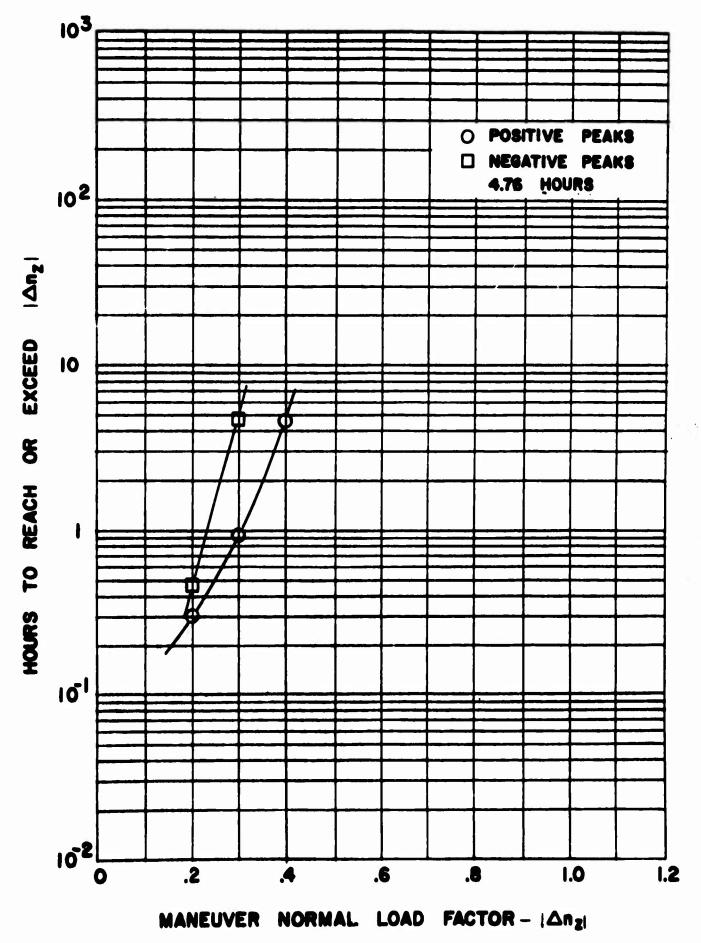


Figure 17. (e) Gross Weight 38,000 to 42,000 Pounds.

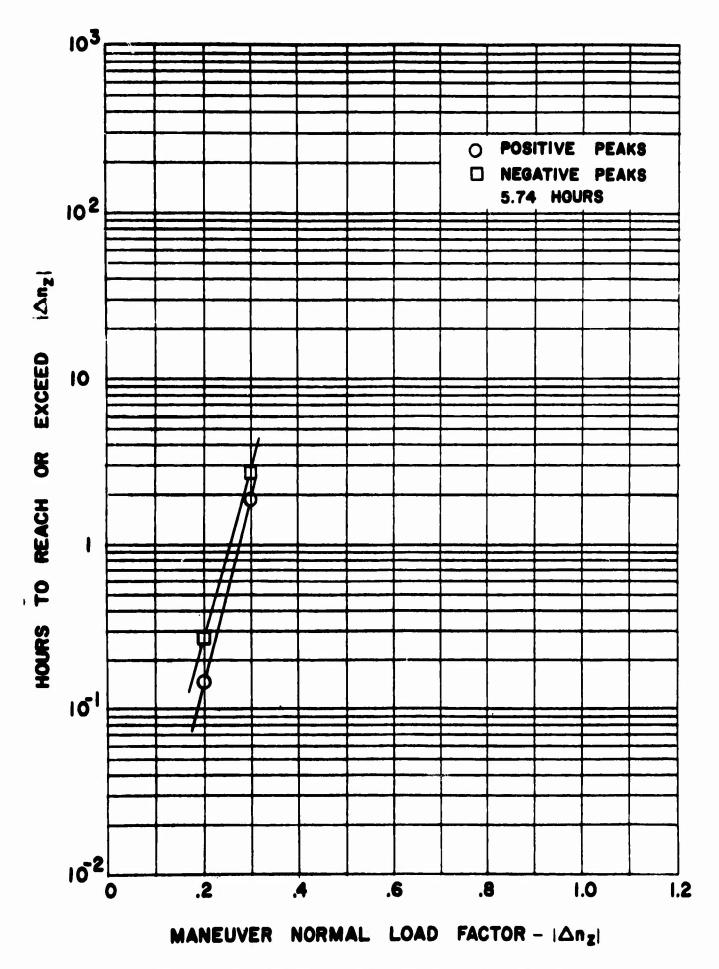


Figure 17. (f) Gross Weight Over 42,000 Pounds.

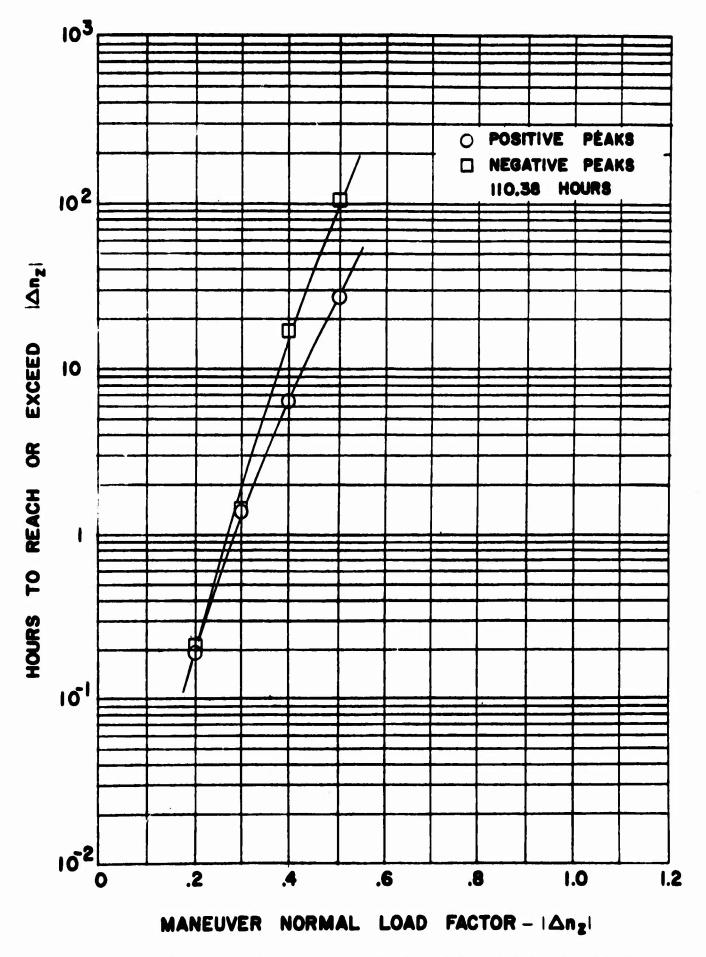


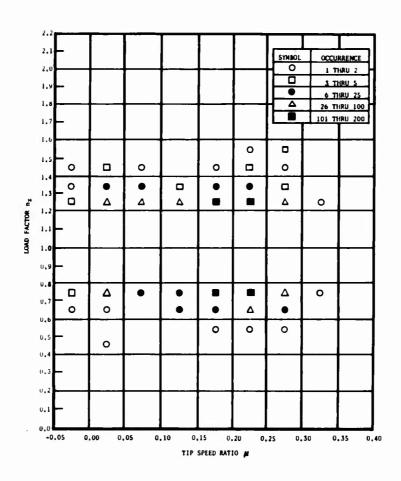
Figure 18. Exceedance Curves for Incremental Maneuver Normal Load Factor Peaks, Composite,

Figure 19 shows a diagram and tabulation of the incremental maneuver normal load factor peaks versus the rotor tip speed ratio. The majority of the load factor peaks fall at the middle of the tip speed ratio ranges.

Figures 20(a) through 20(d), Figures 21(a) through 21(f), and Figure 22 show exceedance curves for both positive and negative incremental gust normal load factor peaks broken down by mission segment and gross weight ranges. The most severe gust environment was encountered during the steady-state mission segment. This is due in part to the criteria used for the establishment of gust peaks, which state that the peaks are not preceded by control stick motions. Since, in general, the steadystate mission segment is characterized by a quiet stick, the load factor peaks in this mission segment have a greater probability of being gusts than maneuvers. The breakdown by gross weight shows that for gross weights up to 38,000 pounds, the curves are similar for each weight range; however, above 38,000 pounds, no incremental gust normal load factors above 0.4g were recorded. The composite incremental gust normal load factor plot of Figure 22 indicates that the positive and negative increments have a very similar profile. This is to be expected if the gusts are considered to be symmetrical. The highest gust normal load factor recorded was 1, 47.

Figure 23 shows a diagram and tabulation of gust normal load factor peaks versus ranges of airspeed. It can be seen that the distribution is quite uniform throughout airspeed ranges from 75 to 110 knots.

Figure 24 shows an oscillogram of a simulated engine failure and a resulting one-engine-out landing. The gas producer rpm and the engine torque of the failed engine fall rapidly at engine failure. At the same time, the gas producer rpm and the torque of the remaining engine are seen to increase to compensate for the lost power. The rotor rpm fell from 183 to 159. The pilot increased the collective pitch to maintain altitude, which also contributed to the loss of rpm. The rpm then increased as the torque was increasing and reached a value of 174 rpm just prior to landing. The gross weight at the time of engine loss was 28,345 pounds, and the pressure altitude was 1,943 feet. The pressure altitude at takeoff was 1,847 feet. Airspeed at engine-out was below 20 knots. The flight time recorded at a rotor rpm below 180 is attributed to test and training flights such as the engine-out landing.



LOAD FACTOR				TIP	SPEED RATE	10 📕 01				ŀ
ng	LESS THAN 0.00	0,00 70 0.05	0.05 0.10	0,10 TO 0,15	0.15 TQ 0,20	0,20 TQ 0,25	0.25 0.30	0.30 TO 0.35	0.35 0.40	TOTAL
2.0 10 2.2										
1.9 TO 2.0										
1.8 TO 1.9										
1.7 TO 1.8										
1.6 TO 1.7										
1.5 TO 1.6						1	3			4
1.4 TO 1.5	2	3	1		1	5	1			13
1,3 TO 1,4	2	11	7	5	13	13	5			56
1,2 TO 1,3	3	40	21	44	160	181	44	1		494
0.8 TO 1.2										
0.7 TO 0.8	6	51	16	20	113	173	38	2		399
0.6 TO 0.7	2	2		7	16	26	8			61
0.5 TO 0.6					2	2	1			S
0.4 TO 0.5		1								1
0.2 TO 0.4										
0.0 TO 0.2										
TOTAL	15	88	45	76	305	401	100	3		1033

Figure 19. Diagram and Tabulation of Maneuver Normal Load Factor Peaks in Ranges of Rotor Tip Speed Ratio.

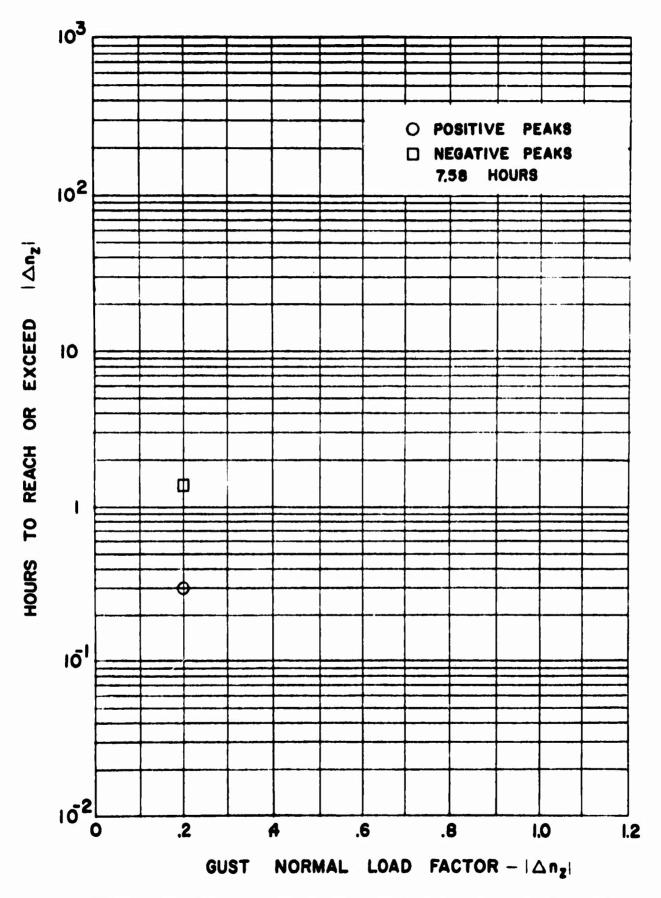


Figure 20. Exceedance Curves for Incremental Gust Normal Load Factor Peaks by Mission Segment.

(a) Ascent Mission Segment

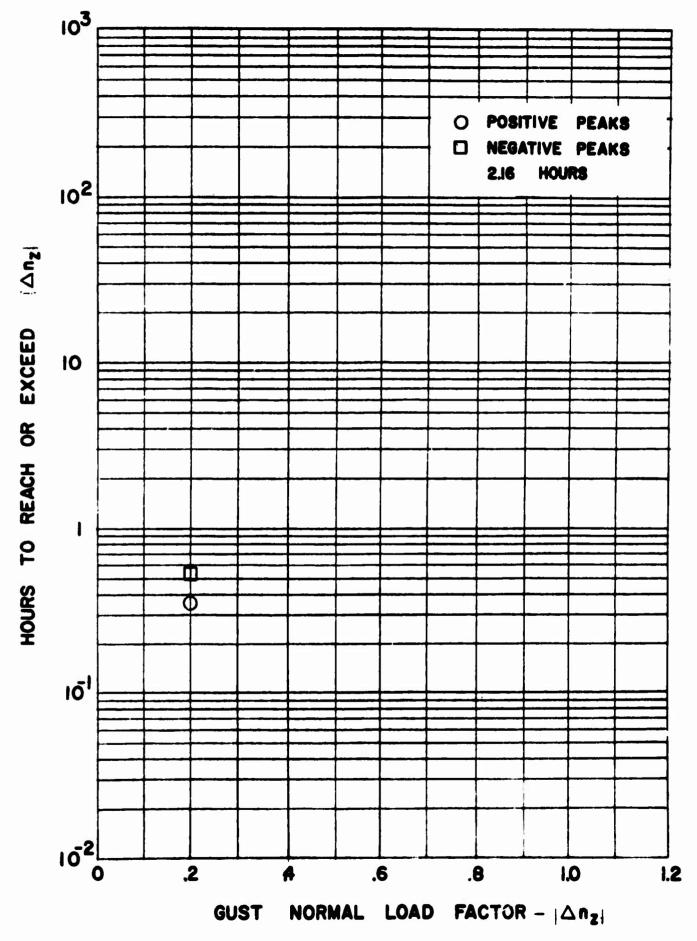


Figure 20. (b) Maneuver Mission Segment.

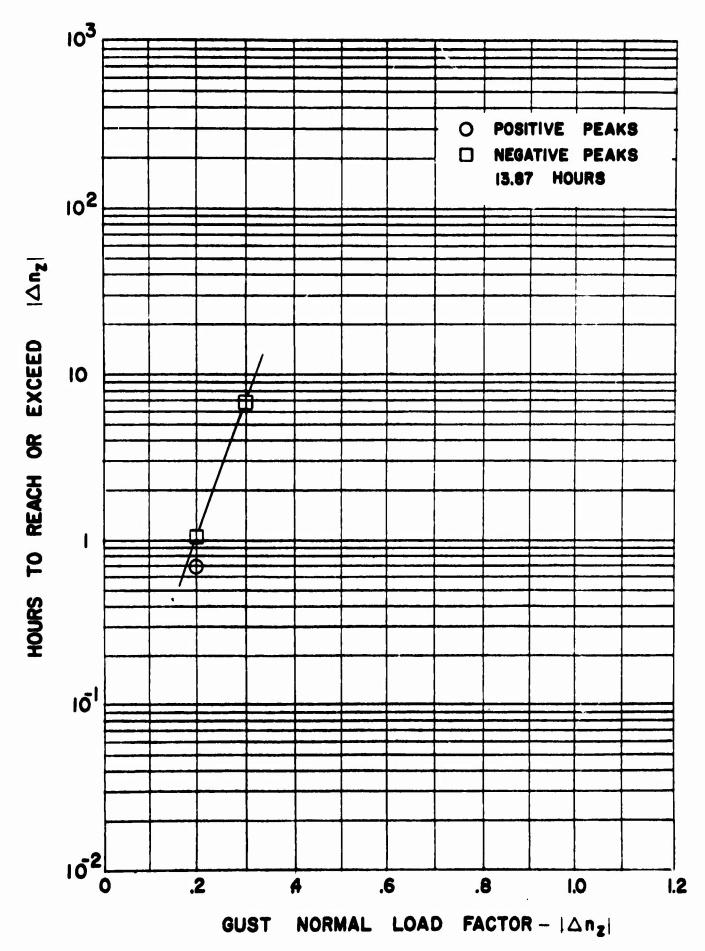


Figure 20. (c) Descent Mission Segment.

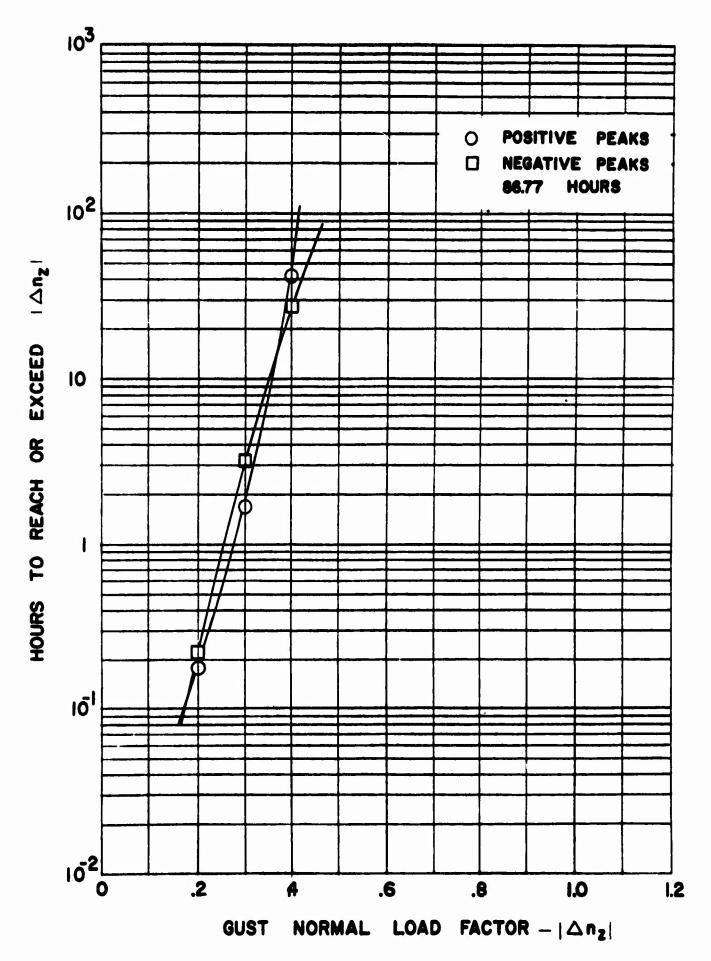


Figure 20. (d) Steady-State Mission Segment.

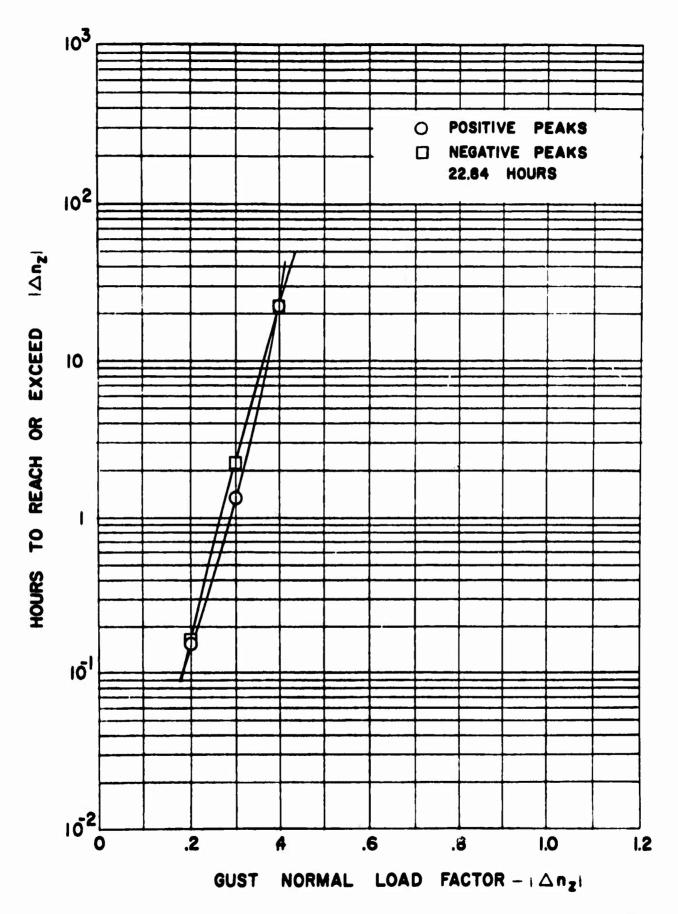


Figure 21. Exceedance Curves for Incremental Gust Normal Load Factor Peaks by Gross Weight Range.

(a) Gross Weight Less Than 26,000 Pounds.

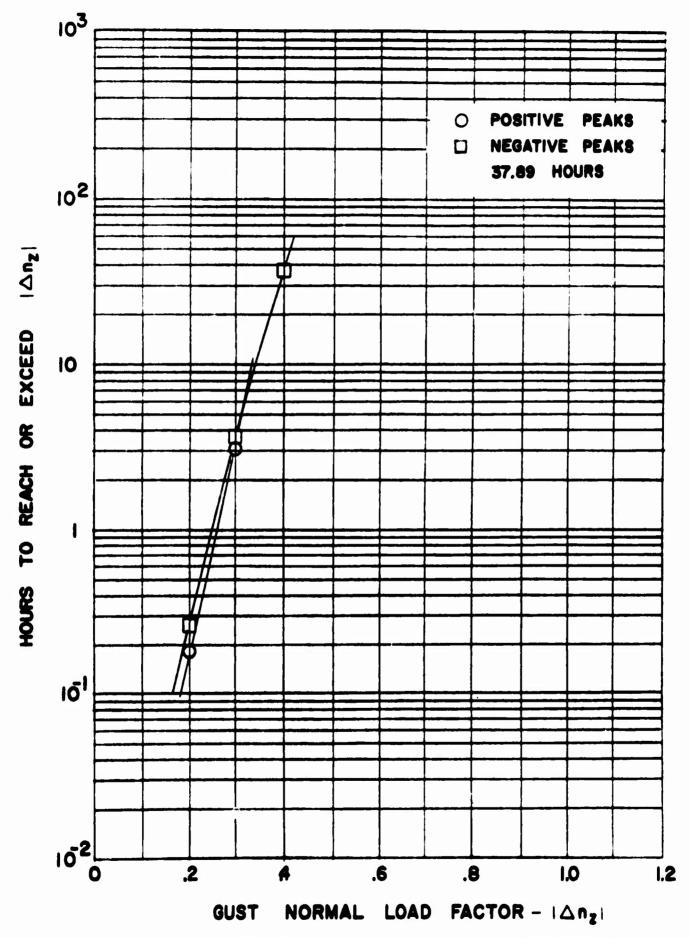


Figure 21. (b) Gross Weight 26,000 to 30,000 Pounds.

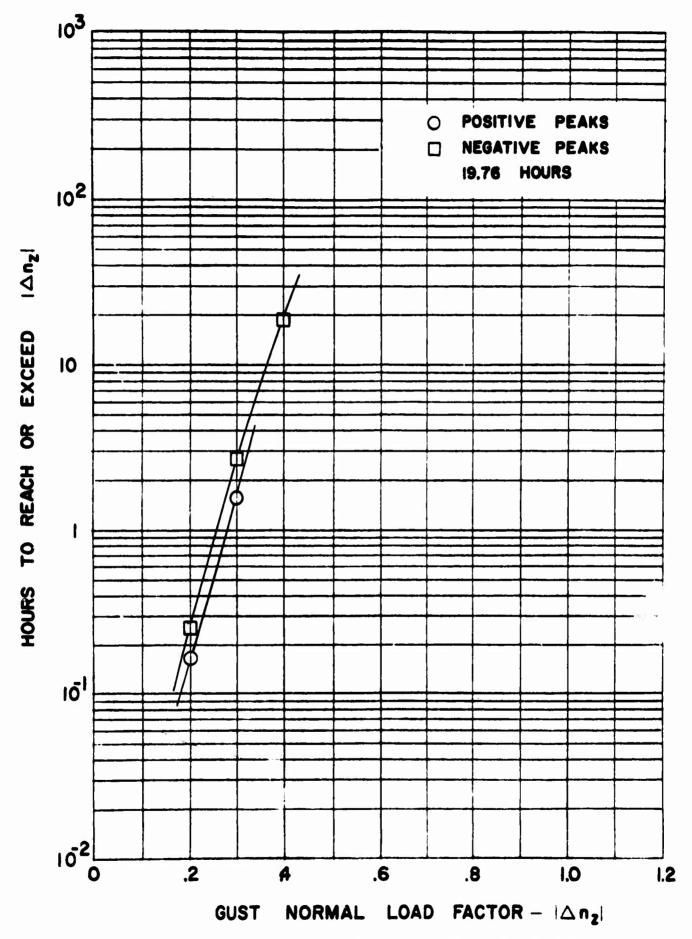


Figure 21. (c) Gross Weight 30,000 to 34,000 Pounds.

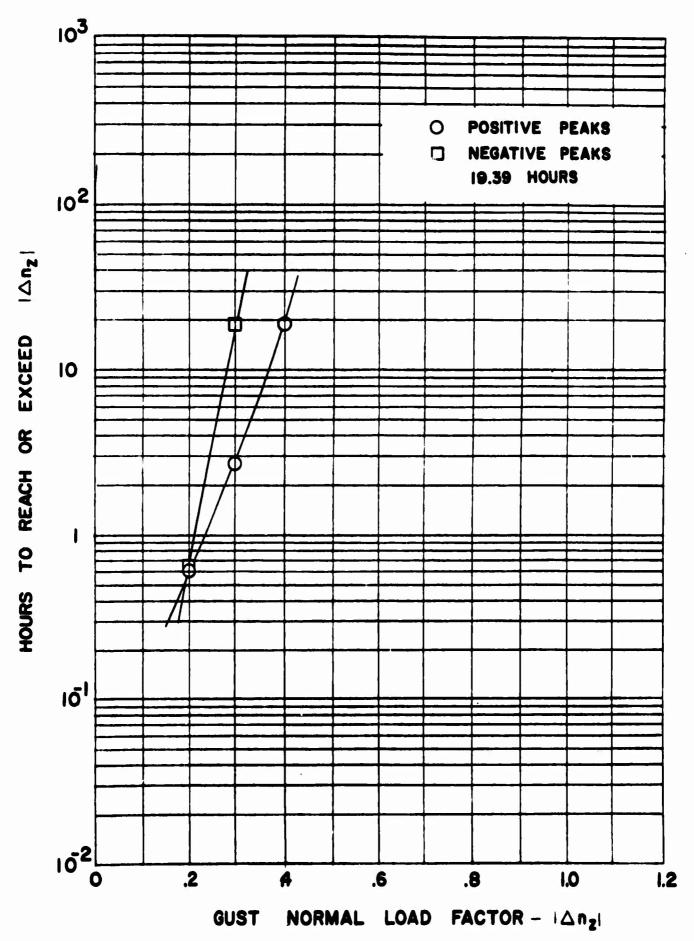


Figure 21. (d) Gross Weight 34,000 to 38,000 Pounds.

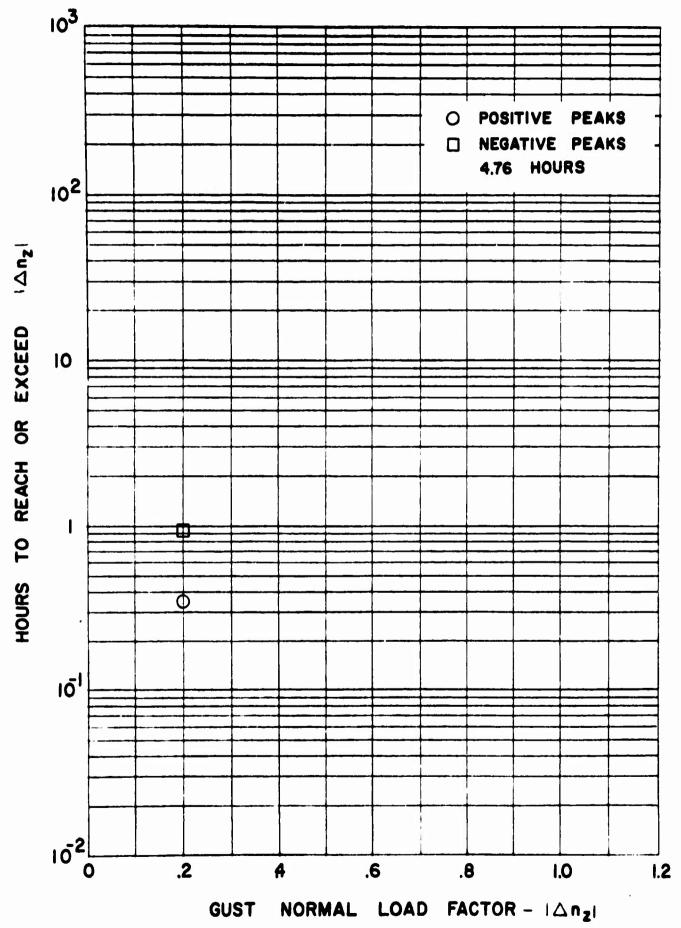


Figure 21. (e) Gross Weight 38,000 to 42,000 Pounds.

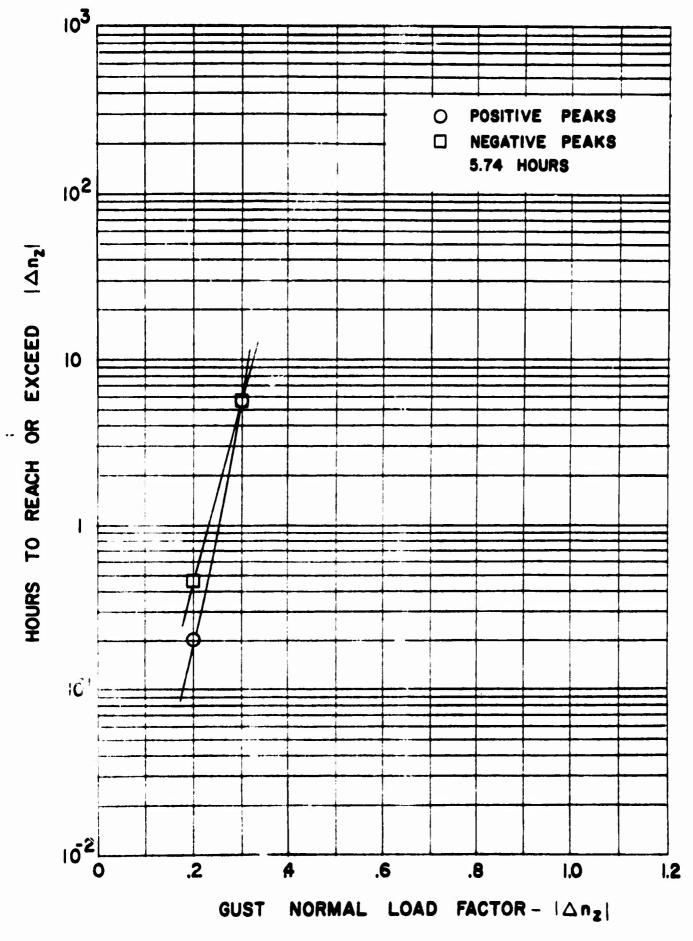


Figure 21. (f) Gross Weight Over 42,000 Pounds.

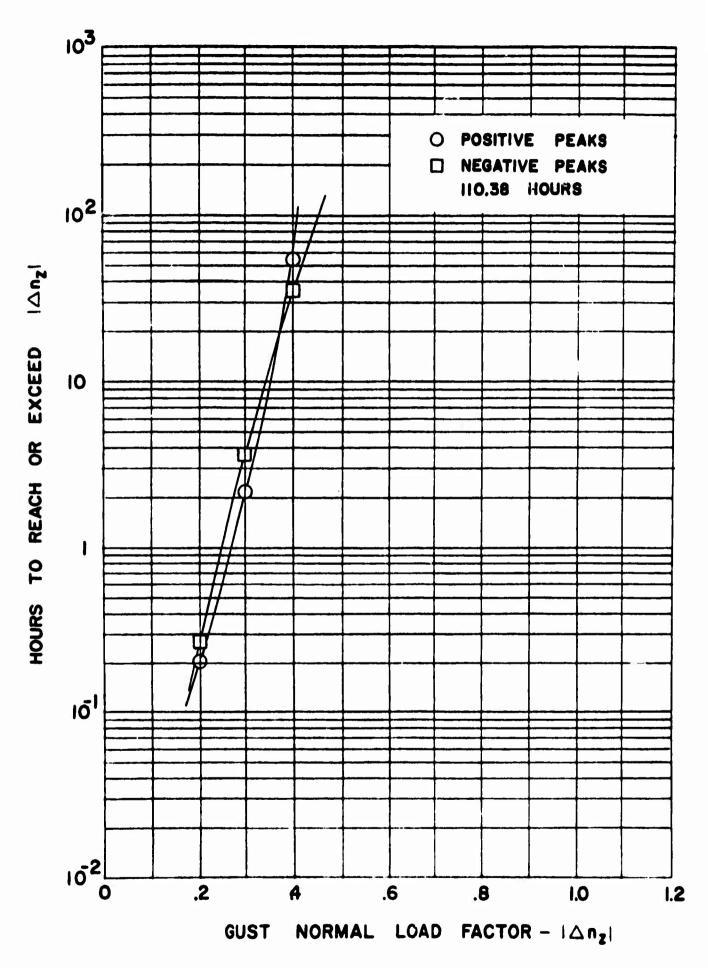
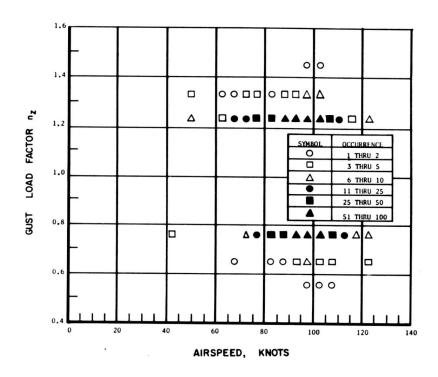


Figure 22. Exceedance Curves for Incremental Gust Normal Load Factor Peaks, Composite.



GUST LOAD						AIRS	PEE	), к	NOTS	;					TOTAL
FACTOR n <sub>z</sub>	40 TO 60	60 TO 65	65 T0 70	70 TO 75	75 TO 80	80 TO 85	85 TO 90	90 TO 95	95 TO 100	100 TO 105	105 T0 110	110 TO 115	115 TO 120	120 T0 125	nz
1.5 TO 1.6															
1.4 TO 1.5									1	1					2
1.3 TO 1.4	3	1	2	3	4	1	3	5	6	10	8				46
1.2 TO 1.3	6	4	14	12	47	38	55	73	76	77	37	21	5	8	473
0.8 TO 1.2															
0.7 TO 0.8	4			7	19	30	47	68	51	58	39	21	8	10	362
0.6 TO 0.7			1			1	1	4	7	3	5			4	26
0.5 TO 0.6									1	1	1				3
0.4 TO 0.5															
TOTAL	13	5	17	22	70	70	106	150	142	150	90	42	13	22	912

Figure 23. Diagram and Tabulation of Gust Normal Load Factor Peaks in Ranges of Indicated Airspeed.

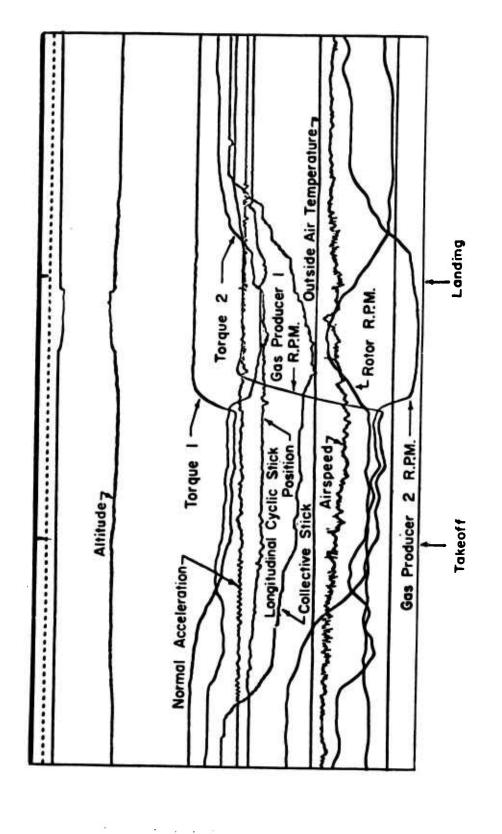


Figure 24. Oscillogram Showing a Practice Landing With One Engine Out.

### CONCLUSIONS

### It is concluded that:

- 1. Since the 110 hours of data collected were short of the 200-hour goal, the results do not possess the desired level of confidence. However, the data collected are valuable in that they represent a majority of the flight hours logged by four CH-54A helicopters of the 478th Flying Crane Company from 4 February 1965 to 27 July 1965. These logged flight hours essentially represent the total operational use of the CH-54A aircraft during this period.
- 2. The preliminary analysis revealed that no flight conditions encountered were above 110 knots, 38,000 pounds, and a density altitude of 1,000 feet. The highest maneuver load factor peak was 1.57, and the highest gust load factor was 1.47. The most severe gust environment was found to occur during the steady-state mission segment. These observed results are well within the design conditions, and indicate safe aircraft operation at all times.

## DISTRIBUTION

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Bureau of Safety, Civil Aeronautics Board	2
US Naval Aviation Safety Center, Norfolk	1
Federal Aviation Agency, Washington, D. C.	1
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### APPENDIX

# INSTRUCTIONS FOR READING COMPUTER PRINTOUTS AND TABLES II THROUGH XXXIII

The range codes for all parameters are given in Table II. The codes are the lower limits of each range.

For the computer printouts, Tables III through XXXIII, all times are given in minutes unless otherwise specified. Since times have been rounded off to the nearest tenth of a minute, time history tables which were added before rounding occurred may disagree with the sum of the rounded values by some fraction of a minute. The following method assures that any value shown is within 0.05 minute of the correct value: a time value between 0 and up to but not including 0.05 minute was printed as "0.0", while no time measured was printed as "0".

Tables having neither points nor time were not printed.

Table headings are arranged so that the first-mentioned parameter refers to the vertical ranges at the left of the table; the second-mentioned parameter refers to the horizontal ranges at the top of the table; and whenever a third or fourth parameter is mentioned, it is followed by its range in the heading. As an example, the heading "n<sub>z</sub> Gust Peaks Versus Velocity by Mission Segment Ascent, Altitude Less, Weight 30,000" indicates the number of gust n<sub>z</sub> peaks in selected airspeed ranges for ascent, altitude below 1,000 feet, and weights between 30,000 and 34,000 pounds.

TABLE	II
Parameter	Limits

		Gust nz and					
Airspeed	i (kn)	Maneuve	1				
Code	Range	Code	Range				
	<u></u>		<u>atunge</u>				
Less	Below 40	Less	Below 0.2				
40	40 to 60	0.2	0.2 to 0.4				
60	60 to 65	0.4	0.4 to 0.5				
65	65 to 70	0.5	0.5 to 0.6				
70	70 to 75	0.6	0.6 to 0.7				
75	75 to 80	0.7	0.7 to 0.8				
80	80 to 85	0.8	0.8 to 1.2				
85	85 to 90	1.2	1.2 to 1.3				
90	90 to 95	1.3	1.3 to 1.4				
95	95 to 100	1.4	1.4 to 1.5				
100	100 to 105	1.5	1.5 to 1.6				
105	105 to 110	1.6	1.6 to 1.7				
110	110 to 115	1.7	1.7 to 1.8				
115	115 to 120	1.8	1.8 to 2.0				
120	Above 120	2.0	2.0 to 2.2				
		2.2	2.2 to 2.4				
		2.4	Above 2.4				
Collectiv	e and Cyclic						
Stick Stea	ady (%)	Temperat	ture (°F)				
Code	Range	Code	Range				
	<del></del>						
Less	Below 10	Less	Below 0				
10	10 to 20	0	0 to 10				
20	20 to 30	10	10 to 20				
30	30 to 40	20	20 to 30				
40	40 to 50	30	30 to 40				
50	50 to 60	40	40 to 50				
60	60 to 70	50	50 to 60				
70	70 to 80	60	60 to 70				
80	80 to 90	70	70 to 80				
90	Above 90	80	80 to 90				
İ		90	Above 90				
Altitud	e (ft)		17 1 1 4 412 A				
			Weight (lb)				
Code	Range	$\underline{Code}$	Range				
Loss	Roland 1 000	1	D-1 3/ 000				
Less 1,000	Below 1,000 1,000 to 2,000	Less	Below 26, 000				
2,000	2, 000 to 5, 000	26,000 30,000	26,000 to 30,000				
5,000	5, 000 to 10, 000	34,000	30,000 to 34,000 34,000 to 38,000				
10,000	10, 000 to 15, 000	38,000	38, 000 to 42, 000				
15,000	Above 15,000	42,000	Above 42, 000				
15,000	A 00 v 6 13, 000	72,000	Above 42,000				

TABLE II, contd.

Rate of (ft/min)		Airspee (ft/sec <sup>2</sup>	d Acceleration
Code	Range	Code	Range
	<del></del>		
Less	Below -1500	Less	Below -15
-1500	-1500 to -1200	-15	-15 to -12
-1200	-1200 to -900	-12	-12 to -9
- 900	-900 to -600	- 9	-9 to -6
-600	-600 to -300	-6	-6 to -3
-300	-300 to 300	- 3	-3 to 0
300	300 to 600	0	0 to 3
600	600 to 900	3	3 to 6
900	900 to 1200	6	6 to 9
1 200	1200 to 1500	9	9 to 12
1 500	Above 1500	12	12 to 15
		15	Above 15
Collecti Stick Pe Code	ve and Cyclic aks (%) Range	Tip-Spee Code	ed Ratio, <b>µ</b> Range
Less	Below -40	Less	Below 0
-40	-40 to -30	0.0	0.0 to 0.5
- 30	-30 to -20	0.5	0.5 to 0.10
- 20	-20 to -10	0.10	0.10 to 0.15
-10	-10 to 10	0.15	0.15 to 0.20
10	10 to 20	0.20	0.20 to 0.25
20	20 to 30	0.25	0.25 to 0.30
30	30 to 40	0.30	Above 0.30
40	Above 40		ì
Thrust Ratio C Code	Coefficient C <sub>T</sub> /σ Range	Rotor F Code	RPM Range
Less	Below 0.06	Less	Below 180
0.06	0.06 to 0.09	180	180 to 185
0.09	0.09 to 0.12	185	185 to 190
0.12	0.12 to 0.15	1 90	190 to 195
0.15	0.15 to 0.18	195	195 to 200
0.18	0.18 to 0.21	200	200 to 205
0.21	Above 0.21	205	Above 205

				ABLE III				
		Time for	Mission	Segment	Versus	Weight		
	TIME (MIN	IUTES) F	OR MIS	SSION SE	GMENT V	S WEIGI	H <b>T</b>	TOTAL
	LESS	26000	30000	34000	38000	420C0	TOTAL	
ASCENT	109.7	126.9	62.3	80.9	30.9	44.0	454.7	
MANUVR	22.0	78.5	21.9		5.1	2.3	129.8	
DESCNT	240.1	223.2	131.9	134.2	46.8	53.9	832.1	
STEACY	999.2	1844.9	969.3	948.2	200.9	243.9	5206.4	
TOTAL	1370.9	2273.5	1185.5	1163.3	285.6		6623.0	

			_			-	TA	BLE	IV							
			Ti	me f	or A	ltitu	de V	ersu	s Air	rspe	ed by	Wei	ght		_	
1	IPE ( MIN	utes) F	OR ALTE	TUDE VS	VELOCI	TY 87 1	ELGHT	LESS								
	LESS	40	60	45	70	75		85	90	95	100	105	110	115	120	TOTAL
LESS	95.0 119.0	5.3	5.0	9.1 6.3	8.1	18.8	3.6	7.0	17.6	17.7	13.7	7.7	1.9	0.2		274.5
2000 5000 10000	123.6	2.5	3.1	2.3	0.5	3.9	30.1	41.5	44.9	1.5	57.5	57.1	23.3	16.7	20.5	461.9
TOTAL	336.5	11.0	16.5	17.7	30.0	40.8	67.3	115.3	79.5	48.7	77.9	72.7	26.6	17.3	20.5	199.2
T	THE (MIN	UTES) F	OR ALTI	TUDE VS	VELOC I	TY BY W	ELGHT 2	•0C0								
	LESS	40	60	65	70	75	•c	0.5	90	95	100	105	110	115	120	TOTAL
LESS	221.0	25.0	16.2	20.5	24.6	20.0 35.7	15.8	24.0	26.5 4C.3	34.6	26.7	24.1	11.2	3.6	0.3	479.9
2000	184.9	12.6	13.4	16.5	29.4	55.0	50.7	65.5	82.2	43.7	50.5	56.5	29.0	4.9		743.3
5000 10000 15000	C.3			0.2	0.6	U . 19	4.2	14.1	c.•	1.9	9.4	36-1	19.0			87.5
TOTAL	583.5	56.6	42.4	59.3	79.8	112.3	127.0	176.9	150.0	137.1	114.4	127.9	63.8	11.4	1.9	1844.9
7	IME (MINI	UTES) F	OR ALTS	tuoe vs	VELOCI	TY 8Y W	ElGHT 3	0000								
	LESS	40	60	65	70	75	90	45	•0	95	100	105	110	115	120	TOTAL
LESS	40.8	3.5	4.8	8.1 5.5	12.9	14.7	16.6	16.0	13.0	7.9	39.2	27.0	24.8 55.1	9.5		223.8
5000	25.5	9.9	9.5	14.2	22.9	28.2	45.1	82.9	66.1	51.1	39.5	23.2	4.6	3.5	0.1	428.4
10000 10000								0.4	C.4	2.7	7.2	13.7	1.0			26.2
TOTAL	133.9	26.8	23.0	27.8	40.7	51.6	71.4	116.4	44.4	70.6	92.2	124.1	86.5	13.5	0.1	969.3
•	1 PE I MINI	JTES) F	UR ALTI	TUDE VS	VELOCI	TY 8Y W	EIGHT 3	<b>4000</b>								
	LESS	40	40	45	70	75	#C	65	90	95	100	105	110	115	120	TOTAL
LESS	37.4 80.1	5.1	2.2	9.0	10.5	12.4	24.1	9.3	34.0	39.6	44.9	31.5	21.0 7.7	0.0		140.7
30C0 30CC	54.3	•	18.2	16.2	12.1	17.3	24.7	46.7	72.5	71.0	57.3	49.4	<b>4.</b> c			328.4 459.0
150CU TOTAL	171.8	23.4	25.3	31.4	28.9	43.6	56.3	82.4	113.3	117.0	108.9	165.3	37.6	0.0		948.2

-						TA	BLE	IV,	cont	d.						
	1 [4F ( M ]	NUTES)	FUR ALT	I FUCE V	S VELOC	ITY BY 1	EIGHT :	38000								
1606 2666 2666 2666 2666	LESS 4.1 13.9 13.9	43	60 6.2 4.3 2.0	65 0.2 1.0 3.1 0.1	70 1.5 1.8 7.9 0.1	75 6.6 2.1 11.9 0.5	8C 5.1 3.7 10.2 1.4	85 1.2 8.1 17.6 0.6	9C 1.7 17.9 14.4 C.5		C.6	1.9	2.4	115	120	
TE FAL	31.9	a • 4	6.5	4.4	11.2	\$1.0	20.4	27.5	34.4	16.4	11.4	5.5	2.4	2.5	0.3	200.
1 LESS 1000 2000 5000 100000 100000 100000 100000 100000 100000 1000000	(ESS 31.8 22.3 14.4	40 40 4.4 1.1 C.9	6G 4.3 3.2 C.8	11DE V5	70 4.5 10.2	75 3.1 13.5 10.8	BC 4.C 11.9	85 2.1 7.3 20.9	90 3.7 9.1 8.9	95 2.5 6.5 6.4	1CC 0.1 7.7 C.2	1C5 0.3 1.3	110	115	120	TOTA 66. 99. 78.
15046 16141	64.5	6.4	<b>8.3</b>	12.7	16.2	27.4	27.1	30.3	21.0	15.5	a.c	1.5	c. 2			243.
1	[*E{P[v	LTESI F	UP ALTI	TUDE VS	VELCCI	TY BY m	EIGHT T	OTAL								
1000L 2016 3016 5016	LeSS 458.8 453.4 415.7 6.3	40 41.4 73.3 16.8	6C 32.8 42.2 47.C	5C.1 4A.B 54.2 C.3	70 57.9 69.1 78.6 1.2	75 63.6 42.7 135.1 5.2	nC 54.5 121.1 18C.2 16.7	63.H 132.0 298.4 56.6	9C 126.2 231.6 5.8	95 61.5 115.8 241.8 6.1	1CC 47.C 131.5 215.6 16.e	105 78.0 117.6 108.0 49.6	11C 54.9 75.3 66.1 2C.8	115 7.0 13.5 25.1	1.H	TOTAL 1135.6 1593.0 2294.1 183.4
15046 1674	1326.1	133.5	122.G	153.4	2UA.d	296.7	372.5	550.8	487.7	425.3	412.7	433.7	217.1	45.6	22.8	5204.

		Time f		ective	ABLE Stick on by	Positi			yclic		
	TIME(MINU	TES) FUR	COLLECT	TIVE VS	CYCLIC	BY CL	IMB LI	SS			
	LESS	10	20	30	40	50	60	10	80	90	TOTAL
LESS											
10											
20 30						0.2					0.2
40				0.1							0.1
50											
60											
70 80											
90											
TOTAL				0.1		0.2					0.3

				T	ABLE	V, con	td.				
1	IMECMIN	UTES) FO	R COLL	ECTIVE	VS CYCL	IC HY C	LIMB -1	500		-	
LESS	LESS	10	20	30	40	50	60	70	80	90	TUTA
10					0.2						0.
30 40				0.1	•••						0.
50 60 70 80 90											•
TOTAL				0.1	0.2						0.
1	IME ( MINU	JTES) FOF	COLLI	ECTIVE	VS CYCLI	IC BY CI	LIMB -1	200			
	LESS.	10	20	30	40	50	60	70	8C	90	TOTA
10 FE22				0.1	0.7						
30 40			0.3	0.5	0.7						G.
50		0.1	0.3		0.3						0.
60 70 80 90											
TOTAL		0.1	0.8	0.6	1.0						2.
							_0.00				
T		TES) FOR	COLLE	30 30	/S CYCLI 40	50 50	.IMB -9	70	8C	90	TOTAL
LESS	LESS	.0	20	30	70	50	30	.0	00	70	TUTAL
10			0.3		0.5	0.1					0.9
30 40	0.1	0.7	2.8	1.4 2.0	1.8 2.2	0.7	0.2				7.0
50		0.3	i.i	0.6	0.3	0.1					7.4
60		0.1	0.1		0.1						0.3
70 80											
90											
TOTAL	0.1	1.1	5.3	4.0	4.8	1.0	0.2				16.6

60 0.3 3.2 0.1 0.2 0.4 4.3 70 80 90 TOTAL 4.2 14.7 40.6 48.8 31.6 12.6 1.5 153.9  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMH -3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL LESS 10 20 30 40 50 60 70 80 90 TOTAL LESS 10 20 30 40 50 60 70 80 90 TOTAL LESS 10 20 8.4 5.0 26.5 11.7 1.4 44.9 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 58.8 40 87.5 64.8 128.1 777.3 520.1 409.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3					TA	BLE V	, cont	d.				
LESS 10 20 0.2 2.2 0.5 2.7 1.4 20 30 2.1 7.7 10.3 11.1 5.5 0.8 37.4 40 1.9 6.1 8.7 26.8 13.4 3.8 0.2 60 0.3 3.2 0.1 10.2 0.4 4.2 60 0.3 3.2 0.1 10.2 0.4 4.2 60 0.3 3.2 0.1 0.2 0.4 4.3 70 80 90 TOTAL 4.2 14.7 40.6 48.8 31.6 12.6 1.5  TIPE(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMH -3CO  LESS 10 20 0.4 5.0 26.5 11.7 1.4 4.2 20 20 0.4 5.0 26.5 11.7 1.4 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 40 87.5 64.8 128.1 777.3 520.1 409.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 182.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 70 80 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.c  TIHE(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 0.3 0.3 0.5 0.9 3.3 6.4 7.1 0.3 18.2 0.3	1	IMECMIN	IUTES) F	UR COLI	<b>FCTIVE</b>	VS. CYCL	IC BY C	LIMB	-600			
LESS 10 20 0.2 2.2 0.5 2.7 1.4 20 30 2.1 7.7 10.3 11.1 5.5 0.8 37.4 40 1.9 6.1 8.7 26.8 13.4 3.8 0.2 60 0.3 3.2 0.1 10.2 0.4 4.2 60 0.3 3.2 0.1 10.2 0.4 4.2 60 0.3 3.2 0.1 0.2 0.4 4.3 70 80 90 TOTAL 4.2 14.7 40.6 48.8 31.6 12.6 1.5  TIPE(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMH -3CO  LESS 10 20 0.4 5.0 26.5 11.7 1.4 4.2 20 20 0.4 5.0 26.5 11.7 1.4 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 40 87.5 64.8 128.1 777.3 520.1 409.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 182.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 70 80 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.c  TIHE(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 0.3 0.3 0.5 0.9 3.3 6.4 7.1 0.3 18.2 0.3		1655	10	20	30	40	50	4.0	70	00	00	TOTAL
20	LESS	6633	10	20	30	40	50	60	70	80	90	TUTAL
30												
40 1.9 6.1 8.7 26.8 13.4 3.8 0.2 61.6 50 2.3 6.0 18.7 11.1 4.3 1.5 C.4 60 0.3 3.2 0.1 0.2 0.4 4.3 70 80 90 TOTAL 4.2 14.7 40.6 48.8 31.6 12.6 1.5 153.9  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMH -3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 0.4 5.0 26.5 11.7 1.4 44.9 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 558.8 40 81.6 12.6 1.5 1652.3 165.0 20.8 160.5 224.6 22.5 758.8 160.5 22.5 758.8 160.5 2								0.8				
50 2-3 6-0 18-7 11-1 4-3 1-5 C-4 44-2 60 0.3 3.2 0.1 0.2 0.4 0.4 0.3 70 70 70 70 70 70 70 70 70 70 70 70 70		1.9										
TOTAL 4-2 14-7 40.6 48-8 31.6 12-6 1.5 153.9  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMH -3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 0.4 5.0 26.5 11.7 1.4 44.9 30.0 89-5 186.5 224.6 22.5 588-8 40 87.5 64-8 128-1 777.3 520.1 409.8 79.6 1.4 2068-6 50 75.6 156.0 709.9 533.1 248-7 118-9 10.1 1852.3 70 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.	50	2.3	6.0	18.7	11.1	4.3	1.5					44.2
### TIME (MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB -3CO    LESS   10   20   30   40   50   60   70   80   90   TOTAL			0.3	3.2	0.1	0.2	0.4					4.3
TOTAL 4.2 14.7 40.6 48.8 31.6 12.6 1.5 153.9  TIME (MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMH -3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  10 20 0.4 5.0 26.5 11.7 1.4 44.9 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 558.8 40 87.5 64.8 128.1 777.3 520.1 409.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 70 0.1 0.1 0.1 0.1 1852.3 70 0.1 0.1 0.1 0.1 0.1 1852.3 70 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.												
TIME (MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB -3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  20 0.4 5.0 26.5 11.7 1.4 44.9 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 588.8 40 87.5 64.8 128.1 777.3 520.1 409.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 1852.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 60 90  TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME (MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 60 61 12.2 5.4 0.8 32.7 0.1 25.9 60 60 70 80 90 TOTAL	90											
LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 0.6 4.6 30.7 89.5 186.5 224.4 22.5 558.8 40 87.5 64.8 128.1 777.3 520.1 409.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 70 80 90 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME(MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL	TOTAL	4.2	14.7	40.6	48.8	31.6	12.6	1.5				153.9
LESS 10 20 30 0.4 5.0 26.5 11.7 1.4 44.9 30 0.6 4.6 30.7 30.7 30.7 30.6 4.6 30.7 30.7 30.7 30.7 30.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 70 0.1 80 90 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME(MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 30 0.5 0.7 30 0.5 0.7 30 30 0.7 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 30 0.7 30 30 30 30 30 30 30 30 30 30 30 30 30	1	IME (MIN	IUTES) F	OR COLI	LECTIVE	VS CYCL	IC BY C	LIMB	-300			
LESS 10 20 30 0.4 5.0 26.5 11.7 1.4 44.9 30 0.6 4.6 30.7 30.7 30.7 30.6 4.6 30.7 30.7 30.7 30.7 30.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 70 0.1 80 90 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME(MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 30 0.5 0.7 30 0.5 0.7 30 30 0.7 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 0.7 30 30 30 0.7 30 30 30 30 30 30 30 30 30 30 30 30 30		LESS	10	20	30	40	50	40	70	RO.	90	TOTAL
30	10								70	.00	70	TOTAL
40 87.5 64.8 128.1 777.3 520.1 400.8 79.6 1.4 2068.6 50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 70 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.												44.9
50 75.6 156.0 709.9 533.1 248.7 118.9 10.1 1852.3 60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 70 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.									1.4			
60 2.6 9.3 62.8 38.2 24.0 46.1 4.2 187.3 0.1 70 80 90 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME(MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL 18.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 16.2 10.3 10.3 16.2 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3												
80 90 TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME(MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 0.3 0.3 0.3 0.5 0.9 3.3 6.4 7.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1		2.6	9.3	62.8	38.2	24.0						187.3
TOTAL 166.3 234.8 931.9 1443.2 1005.9 810.9 117.7 1.4 4712.C  TIME(MINUTES) FUR COLLECTIVE VS CYCLIC BY CLIMB 3C0  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  40 1.9 6.5 6.6 33.0 23.3 11.5 0.4 83.2 50 4.3 12.1 34.6 36.7 14.7 1.0 0.3 103.7 60 0.8 2.6 6.9 6.4 7.0 0.5 19.2 70 80 90 TOTAL  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6C0  LESS 10 20 30 40 50 60 70 80 90 TOTAL	80				0.1							0.1
LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.		166.3	234.8	931.9	1443.2	1005.9	810.9	117.7	1.4			4712.C
LESS 10 20 0.3 30 0.5 0.9 3.3 6.4 7.1 18.2 40 1.9 6.5 6.6 33.0 23.3 11.5 0.4 83.2 50 4.3 12.1 34.6 36.7 14.7 1.0 0.3 103.7 60 0.8 2.6 6.9 6.4 7.0 0.5 119.2  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 0.4 1.8 0.8 0.9 40 3.4 2.4 11.0 6.3 2.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90	T	IWE (WINI	UTES) FO	UR COLL	ECTIVE	VS CYCL	IC BY CI	LIM8	3C0			
LESS 10 20 0.3 30 0.5 0.9 3.3 6.4 7.1 18.2 40 1.9 6.5 6.6 33.0 23.3 11.5 0.4 83.2 50 4.3 12.1 34.6 36.7 14.7 1.0 0.3 103.7 60 0.8 2.6 6.9 6.4 7.0 0.5 119.2  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 0.4 1.8 0.8 0.9 40 3.4 2.4 11.0 6.3 2.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90		IFCC	10	20	30	40	50	60	20	80	90	TOTAL
20	LESS	6.00	••			•		.,,	••	•	,,	TOTAL
30												
40 1.9 6.5 6.6 33.0 23.3 11.5 0.4 83.2 50 4.3 12.1 34.6 36.7 14.7 1.0 0.3 103.7 60 0.8 2.6 6.9 6.4 7.0 0.5 19.2 80 90 TOTAL 7.0 21.7 48.9 79.5 46.7 20.1 0.7 224.6  FIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL 10 20 30 0.4 1.8 0.8 0.9 3.9 40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90			0.5	0.0	2.2		7.1					0.3
50 4.3 12.1 34.6 36.7 14.7 1.0 0.3 103.7 60 0.8 2.6 6.9 6.4 7.0 0.5 19.2 70 80 90 TOTAL 7.0 21.7 48.9 79.5 46.7 20.1 0.7 224.6 FIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL LESS 10 20 30 40 50 60 70 80 90 TOTAL 20 20 30 0.4 1.8 0.8 0.9 40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90		1.9			33.0		11.5	0.4				83.2
70 80 90 TOTAL 7.0 21.7 48.9 79.5 46.7 20.1 0.7 224.6  FIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  20 30 0.4 1.8 0.8 0.9 3.9 40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90	50	4.3	12.1	34.6	36.7	14.7	1.0					103.7
80 90 TOTAL 7.0 21.7 48.9 79.5 46.7 20.1 0.7 224.6 FIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  20 30 0.4 1.8 0.8 0.9 3.9 40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90		8.0	2.6	6.9	6.4	7.0	0.5					19.2
TOTAL 7.0 21.7 48.9 79.5 46.7 20.1 0.7 224.6  TIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  20 30 0.4 1.8 0.8 0.9 3.9 40 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 6.2 70 80 90												
FIME(MINUTES) FOR COLLECTIVE VS CYCLIC BY CLIMB 6CO  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 40 50 60 70 80 90 TOTAL  20 30 50 60 60 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 80 90 80 80 90 70 70 80 80 80 90 70 70 80 80 80 90 70 70 80 80 80 90 70 70 80 80 80 90 70 70 80 80 80 90 70 70 80 80 80 90 70 70 80 80 80 90 70 70 80 80 90 70 70 80 80 90 70 70 80 80 90 70 70 80 80 90 70 70 80 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 70 70 80 90 90 70 70 80 90 90 70 70 80 90 90 70 70 80 90 90 70 70 80 90 90 90 90 70 70 80 90 90 90 90 90 90 90 90 90 90 90 90 90	90											
LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 0.4 1.8 0.8 0.9 3.9 40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90	TOTAL	7.0	21.7	48.9	79.5	46.7	20.1	0.7				224.6
LESS 10 20 30 40 50 60 70 80 90 TOTAL  LESS 10 20 30 0.4 1.8 0.8 0.9 3.9 40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90	r	IME (MIN	JTES) FO	OR COLL	ECTIV <b>E</b>	VS CYCLI	IC BY CL	. IMB	600			
LESS 10 20 30		1000	10	26	**		60	4.0	30	0.0		7074
30	10	rs 22	10	20	30	40	20	60	70	60	40	IUIAL
40 3.4 2.4 11.0 6.3 2.7 0.1 25.9 50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90												
50 2.1 6.0 6.1 12.2 5.4 0.8 32.7 60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90			3.4					0 - 1				
60 0.1 1.7 2.7 1.1 0.4 0.1 6.2 70 80 90		2.1						0.1				
80 90	60											
	80											
		2.2	11.1	11.6	26.1	12.9	4.6	0.1				68.6

				TA	ABLE	V, con	td.				
	TIME ( MIN	NUTES)	FOR COL	LECTIVE	VS CYC	LIC BY	CLIMB	900		· · -	
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS											
20											
30 40		2.5	0.5	3.7	0.2 1.3	0.4					C • 2 8 • 4
50	0.5	0.5			1.9	0.4					10.8
60 70		0.2	0.2		0.1	0.2					0.8
80											
90				91.00	11 10						
TOTAL	0.5	3.2	3.5	8.8	3.5	0.6					20.2
1	IME (MIN	IUTES)	FOR COL	LECTIVE	VS CYC	LIC BY	CLIMB	1200			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS	_ 3								•	,,	
10 20											
30			0.5								C.5
40				0.5	1.5						2.C
50 60		0.5	0.5	1.5	0.3	0.2					2.9
70			•••			002					0.3
80											
TOTAL		0.5	1.1	2.1	1.8	0.2					5.7
т	IME (MIN	UTES) f	OR COL	LECTIVE	VS CYCL	.IC BY C	LIME	1500			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS									•	,,	10120
10 20											
30				0.5							0.5
40				0.4							0.4
50 60				0.5	0.2						0.7
70											
80 90											
TOTAL				1.4	0.2						1.6
ī	IME ( MIN	UTES) F	OR COL	LECTIVE	VS CYCL	IC BY C	LIMB T	UTAL			
LESS 10	LESS	10	20	30	40	50	60	70	AC	90	TOTAL
20		0.2	2.9	5.6	30.9	13.2	1.4				54.1
30 40	0.7 91.3	7.2 84.0	43.2 147.7		206.7 568.1	238.7 428.3	23.5 80.4	1 4			627.4
50	84.7	181.6	773.8	601.0	276.1	122.3	10.8	1.4			256.1
60	3.6	14.2	76.1	45.8	26.9	47.6	4.2				218.4
70 80				0.1							0.1
90											
TOTAL	180.3	287.2	1043.7	1614.7	1108.8	850.1	120.2	1.4			206.4

TABLE VI
Time for Rotor RPM Versus Rate of Climb by
Outside Air Temperature

T	IME (MI	NUTES) (	FUR RPM	VS CLI	ME BY	TEMPERAT	URE	30				
	LESS	-1500	-1200	-900	-600	-300	300	600	900	1200	1500	TOTA
LESS					_							
18C 185				• •	0.6	1.6						2.
190				0.4	0.8	39.5 25.3	2.4	0.5				43.
195				0-8		27.3	1.7	0.9				28.
200												
205												
TOTAL				1.2	1.4	66.4	4.1	1.4				74.
T	IME (MIN	IUTES) F	OR RPM	VS CLI	MB BY 1	TEMPERAT	URE	40				
		-1500		-900	-600	-300	300	600	900	1200	1500	TOTA
LESS 180				0.1	0.3	35.4	1.9	0.1	,,,,	.200	1,00	
185				0.1	6.2	167.8	4.5	1.1	C.8	0.3		37. 180.
190	0.1		0.7	1.4	7.5	158.5	9.6	0.8	C-8	0.3	0.1	179.
195			- • •			0.1					~ • •	0.
200												
205												
OTAL	0.1		0.7	1.5	14.0	361.8	16.C	2.1	1.6	0.3	0.1	398.
T	IME (MIN	UTES) F	UR RPM	VS CLI	48 BY T	EMPERATI	JRE	50				
	LESS	-1500	-1200	-900	-600	-300	30C	600	900	1200	1500	TOTA
LESS				0.5	5.7	287.7	9.0	1.3		0.1		304.
185				0.5	4.0	305.4	11.7	1.6	1.2	0.3	0.2	
150				0.7	9.7	214.9	16.6	3.7	3.8	1.5	0.3	251.
195				• • •	2.2	7.3	0.3	0.9	C.9	0.2		11.
<b>2</b> C0						1.1						1.
2C5 OTAL				1.7	21.6	816.3	37.6	7.5	5.9	2.1	0.5	893.
TI	IME (MIN	UTËS) F	OR RPM	VS CLIM	18 BY T	EMPERATU	RE	<b>6</b> 0				
	LESS	-1500	-1200	-900	-600	-300	300	600	900	1200	.150C	TOTA
LESS					0.1	0.4	0.3				,	0.
180				0.1	3.4	197.3	10.5	1.2	C.3	0.1		212.
185			0.3	1.8	22.1	684.4	31.6	9.1	2.2	0.3		751.
190	0.2	0.3	0.3	3.6	27.8	412.1	25.5	11.9	1.7	0.6	0.4	484.
195 200					0.2	13.7 2.3	0.3					14.
205						2.3	0.3					2.
DTAL	0.2	0.3	0.6	5.5	53.7	1310.2	68.4	22.2	4.2	0.9	0.4	1466.
T	IME ( MIN	IUTES) F	OR RPP	VS CLI	MB BY 1	EMPERAT	JRE	70				
	LESS	-15C0	-1200	-900	-600	-300	30C	600	900	1200	1500	TOTA
LESS					•	1.3	0.2					1.
180				• .	2.4	150.3	7.3	1.1	C.2	0.6		162.
185 190			0.1 1.0	2.4 3.1	22.2	828.7 328.1	35.9 13.8	9.2 7.1	1.7	0.8	0.2	900. 372.
195			1.0	0.1		10.8	0.4	0.3	,	V. 0	0.2	11.
200				0.1		0.2						Ö.
205							-					
OTAL			1.1	5.6	40.4	1319.4	57.7	17.6	4.3	2.2	0.2	1448.

	<u>-</u> -				TAB	LE VI	conto	1.				
Ť	IMEEMIN	IUTES) F	OR RPP	VS CLI	MB 8Y 1	TEMPERAT	URE	80				
	LESS	-15CO	-1200	-900	-600	-300	300	600	900	1200	150C	TOTA
LESS			0.1		0.1	7.9		0.1	0.1			8.
180				0.2	4.5	179.6	8.9	2.7	C.6	0.1	0.1	196.
185				0.3	11.9	420.7	22.4	6.9	2.4		0.3	464
190				0.1	1.9	46.1	C.7	1.7	C.9			51.
195				• • •		1.5		•				1.
200						•••						•
205												
TOTAL			0.1	0.6	18.4	655.8	31.9	11.4	4.1	0.1	0.4	722
T	IME ( MIN	IUTES) F	OR RPP	VS CLI	MB BY 1	remperat	URE	90				
									621			
	LESS	-15CO	-1200	-900	-600	-300	30C	600	900	1200	15CC	TOTA
LESS					0.1	0.2	0.2	0.1				0.
180					1.5	46.1	3.4	3.5		0.1		54.
185				0.3	2.7	120.4	4.4	2.7	C.1			130
190				0.1	0.2	14.8	0.8	0.1				16
195						0.5						0.
200						0.2						0.
205												
TOTAL				0.4	4.4	182.1	8.8	6.3	C.1	0.1		202.
T	IME ( MIN			VS CLI	MB 8Y 1	EPPERAT	URE TO	DTAL				
	LESS.	-15CO	-1200	-900	-600	-300	30C	600	500	1200	15CC	TCTA
LESS			0.1		0.2	9.8	C.7	0.2	C.1			11.
180				0.9	18.3	898.1	41.0	10.0	1.1	1.0	0.1	970.
185			0.4	5.8	69.9	2566.8	112.9	31.1	8.3	1.8	0.5	2797.
190	0.3	0.3	2.0	9.7		1199.7	68.8	26.2	9.8	2.8		1383.
195				0.1	2.4	33.8	1.0	1.1	C.9	0.2		39.
200				0.1		3.7	0.3		_ • •			4.
205				•••								7.
TATO	0.3	0.3	2.5	16.6		4712.0	224 4	68.6	20.2	5.7		5206.

		Time	for $\frac{C_T}{\sigma}$	TABI Versus	LE VII μby Ra	ate of C	limb		
T	IME (MIN	UTES) FO	JR CT/S	VERS	US MU	BY C	LIMB	LESS	
. =	LESS	0.00	0.05	0.10	0.15	C • 20	0.25	C-30	TOTAL
0.06 0.09 0.12 0.15 0.18						0.2	0.1		C. 3
0.21 TUTAL						0.2	C-1		C • 3
T	IME(MIN	UTES) FI	UR CT/S	S VERS	US MU	ву С	LIMB -	1500	
	LESS	0.00	0.05	0.10	0-15	C.20	0.25	C • 30	TUTAL
0.06 0.09 0.12 0.15 0.18					0.1	0.1	0.1		C . I
0.21 TOTAL					0.1	0.1	0.1		C.
T	IME (MIN	UTES) FO	JR CT/S	S VERS	us mu	BY C	LIMH -	1200	
	LESS	U•C0	0.05	0.10	0.15	C.20	0.25	C.30	TOTAL
U-06 0-09 0-12 0-15 U-18		0.1		0.3	0.7	0 • 2	C.2		C • 6
0.21 TOTAL		C-1		0.3	1.8	0.2	0.2		2.5
<b>T</b> )	[MF(MINI	UTES) FL	JR CT/S	VERSI	UM ZL	BY CI	LIMB	-900	
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
LESS 0.06 0.09 0.12 0.15 0.18		0.6		0.8	0.3 6.2 0.2	0.2 6.6 0.3	C.9	0.1	C.5 15.2 1.1
0.21		C • 7		1.1	6.7	7.1	0.9	0.1	16.0

			T.	ABLE V	II, con	td.			
T	IMEIMI	NUTES) F	UR CT/	'S VERS	US MU	BY	CLIMU	_ 4.00	THE TRANSPORT STATE OF STATE O
•	41 ( (114)		UK (17	2 ACV2	03 MU	n r	CLIME	-600	
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	. C.30	TOTAL
LESS			0.1	0.9	5.8	4.7	0.7		13.5
0.06	0.2		3.9		33.1			0.7	113.3
0.09		2.3	0.7	4.1	8.2	9.8	1.9		27.1
0.12									
0.15 C.18									
0.21									
TOTAL	0.2	8.9	4.7	13.3	47.1	56.1	22.9	0.7	153.9
Т	IME(MI	NUTES) FO	OR CT/	S VERS	US MU	AY.	CLIME	-300	
				_ , _ , _ ,			J = 1	2.3.7	
	LESS		0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
LESS	4.1		24.1	10.4	54.2	109.0	20.C	1.4	312.3
0.06	37.1		110.9	104.2	594.0	1104.1	576.C	4.5	3358.8
0.09	2.5	154.0	28.6	35.3	212.0	466.3	142.2		1040.8
0.12									
0.15 0.18									
0.21									
TOTAL	43.8	1070.9	163.6	149.9	860-1	1679.4	738.2	6.0	4712 n
					00001	10174	13002	0.0	471210
т.	IMELMIN	IUTES) FO	R CT/	S VERSI	US MU	RY (	LIME	300	
	• • • • • • • • • • • • • • • • • • • •							7.50	
	LESS	0.00	0.05	0.10		0.20	0.25	C.30	TOTAL
LESS		1.0	0.7	0.9	7.H	7.5			17. H
0.CL		11-4	8.5	12.5			13.3	0.3	164.3
0.09		2.8	1.2	3.0	15.7	16.6	3.2		42.5
0.12									
0.15 0.18									
0.21									
TOTAL		15.1	10.3	16.4	70.6	95.5	16.5	0.3	224.6
T	IME (MIN	IUTES) FO	R CT/	S VERSI	JS MU	ey o	LIME	600	
•						•	•		
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C • 30	TOTAL
LESS		9.1	0.3	1.4	4.0	1.0			6.8
0.06	0.8	3.8	3.3	7.8	22.2	10.8	1.7		50.4
0.09		0.9	0.2	1.1	6.0	2.9	0.3		11.5
0.12 0.15									
0.19									
0.21									FI.
TOTAL	0.8	4.8	3.8	10.3	32.2	14.6	2.1		68.6

			TA	ABLE	VII, co	ontd.			
	TIME (MI	NUTES) FU	R CT/S	VER	SUS MU	E Y	CLIMH	900	
	LESS	0.00	0.05	0.10	0.15	-	0.25	C.30	TOTAL
LESS				0.5	0.4				C.9
0.06		0.7	1.1	4.4	6.7				17.1
0.09		0.2	0.6	0.5	0.3	0.6	•		2.2
0.12									
0.18									
0.21									
TUTAL		0.9	1.7	5.4	7.4	4.4	0.4		26.2
10176	•	0.7		7.7	1.4	7.5	0.4		20.2
	TIME(MI	NUTES) FU	R CT/S	VER!	Sui6 MU	BY	CLIMB	1200	
	LESS		0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
LESS		0.2		0.1					C • 2
0.06		0.5	0.5	1.5	1.4				4.7
0.09				0.5	0.2	0.1	7		C-8
0.12									
0.15									
0.21									
TOTAL		0.6	0.5	2.0	1.7	0.8	0.2		5.7
1012		0.0	0.5	2.0	1	0.0	0.2		5.1
	TIME(MI	NUTES) FO	R CT/S	VERS	US MU	BY	CLIMB	1500	
	LEGS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
LESS					0.4	0.1		•••	C.5
0.06				0.1	1.0	0.1			1.1
0.09									
0.12									
0.15									
0.18									
0.21									
TOTAL				0.1	1.4	0.2			1.6
	TIME (MI	NUTES) FU	R CT/S	VERS	US MU	BY	CLIME T	OTAL	
	LESS		0.05	0.10		0.20		C.30	TOTAL
LESS	4.1				73.5	122.5		1.4	
0.06	38.2			39.9		1239.3		5.7	3727.3
0.09	2.5	160.2	31.4	44.9	242.8	496.5	147.6		1126.0
0.12									
0.15									
0.18									
0.21 TOTAL	44. 0	1102.0	94 7 1	00 0	1029.0	1850 4	781.6	7 1	6204 4
TOTAL	44.7	1102.0	1.07.1	70.0	1029.0	1028.4	101.0	/ • L	5206.4

						E VIII					
		Cycl					-	tick St	eady		
				by Col	lective	Stick	Steady	<u> </u>			
	-										
С	YCLIC P	EAKS V	S CYCI	LIC STE	ADY HY	COLL. ST	EADY	20			
LESS	LESS	10	20	30	40	50	60	7 C	80	90	TOTAL
-40											
-30 -20							1				1
-10						5	•				5
10 20						3					3
30 40											
TOTAL						8	1				9
TIME	0.	0.2	2.9	5.6	30.9	13.2	1.4	0.	С.	0.	54.1
r	YCLIC P	EAKS V	כ רערו	IC STEA	.nv av (	:OLL. ST	EAINV	30			
·											
LESS	LESS	10	20	30	40	50	60	70	8C	90	TOTAL
-40 -30											
-20			1	1		1 5					1 7
-10 10		1	2	6	6	8 1 <i>2</i>					22 28
20		•	,	•	•	**					26
30 40											
TOTAL		1	6	13	12	26					58
TIME	0.7	7.2	43.2	107.3	206.7	238.7	23.5	0.	c •	0.	627.4
	YCLIC PI	EAVE V	e // <b>///</b> 1	IC STEA	.nv BV r	OLL. ST	FADV	40			
·					40	50	60	10	80	90	TOTAL
LESS	LESS	10	20	30	70	90	80	70	αv	70	TOTAL
-40 -30					1	2	3				6
-20	_	3	1	3	12	17	3				39
-10 10	1 2	1	5 7	15 16	23 6	23 13	2 3				69 4H
20 30	_	i			2	1					4
40	3	5	13	34	44	56	11				166
TOTAL								1 4	Ć.	0	2256.1
TIME	91.3	84.0	147.7	854.9	568.1	428.3	80.4	1.4	C.	0.	£ € 70 • 1

				TAB	LE VI	II, con	td.			====	
C	YCLIC P	EAKS V	S CYCL	IC STEA	DY BY C	OLL. ST	EADY	50			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30					5						5
-20			1	2	32	.1	1				31
-10	_	1	6	12	20	9					48
10 20	1	2	3	5	12	2					25
30											
40				1							1
TOTAL	1	3	10	20	69	12	1				116
TIME	84.7	181.6	773.8	601.0	276.1	122.3	10.8	0.	C.	Ů.	2050.3
	84.7 YCLIC P			601.0				60	c.	ð.	2050.3
									C. 80	90	2050.3
C	YCLIC P	EAKS V	S CYCL	IC STEA	DY BY C	OLL. ST	EADY	60			
C LESS -40	YCLIC P	EAKS V	S CYCL	IC STEA	DY BY C	OLL. ST	EADY	60			
C	YCLIC P	EAKS V	S CYCL	IC STEA	DY BY C	OLL. ST 50	EADY	60			TOTAL
C LESS -40 -30 -20 -10	YCLIC P	EAKS V	S CYCL	IC STEA	DY BY C	OLL. ST	EADY	60			TOTAL 4
C LESS -40 -30 -20 -10	YCLIC P	EAKS V	S CYCL	IC STEA 30	DY BY C	OLL. ST 50	EADY	60			TOTAL 4 6
C LESS -40 -30 -20 -10 10 20	YCLIC P	EAKS V	S CYCL	IC STEA 30	DY BY C	OLL. ST 50	EADY	60			TOTAL 4
C LESS -40 -30 -20 -10	YCLIC P	EAKS V	S CYCL	IC STEA 30	DY BY C	OLL. ST 50	EADY	60			TOTAL 4 6
C LESS -40 -30 -20 -10 10 20 30	YCLIC P	EAKS V	S CYCL	IC STEA 30	DY BY C	OLL. ST 50	EADY	60			TOTAL

TABLE IX Cyclic Stick Peaks Versus Cyclic Stick Steady by Density Altitude ALTITUDE LESS CYCLIC PEAKS VS CYCLIC STEADY 40 50 60 70 HO 90 TOTAL LESS 10 20 30 1 9 11 7 2 2 19 ı 23 31 30 25 85 30 1 20 40.8 1135.6 CYCLIC STEADY CYCLIC PEAKS VS ALTITUDE BY 10C0 LESS 10 20 30 40 50 60 70 80 90 TOTAL 3 3 14 7 29 20 21 2 8 5 45 26 71 48 70 47 11 173 22.9 312.0 470.9 344.1 0. c. 0. 1593.0 CYCLIC PEAKS CYCLIC STEADY ALTITUDE 2000 BY LESS 10 20 30 40 50 60 70 80 90 TOTAL 1 13 15 5

ı

1

C.

0.

16.7

24

48

27

2

103

2294.3

LESS -40 -30

-20 -10

TOTAL

TIME

LESS -40 -30

-20

-10

10

TIME

LESS -40 -30

-20

-10

10

20

30 40

2

TOTAL

TIME

28

424.7

35

350.4

3

11

514.4

1

170.7

1 25

660.8

		TAI	BLE :	X		
Су		ck Pea Steady			•	c Stick
vs	CYCLIC	STEADY	ВУ	VELOC	ITY	LESS
O	20	30	40	50	60	70

				Sieau	y by A	rrspe	ea				
С	YCLIC PI	EAKS VS	CYCL	IC STEAD	Y BY	VELO	CITY	LESS			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30					6	3	3				
-20		ı	1	5	42	19	5				12 73
-10	1	•	5	10	42	37	ź				97
10	1	4	8	18	19	27	3				80
20		1	1		2	1					5
30											
40 TOTAL	2	6	15	33	111	87	13				267
TIME	2.6	10.9	58.5	157.2	466.8	527.6	101.0	1.4	C.	0.	1326.1
C	YCLIC PE	AKS VS	CYCL	IC STEAD	Y BY	VELO	CITY	40			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30											
-20					1	3					4
-10				8	1	3					12
10				4		1					5
20 30											
40											
TUTAL				12	2	7					21
TIME	C-4	5.0	11.4	47.7	44.3	23.0	1.8	0.	с.	0.	133.5
CY	CLIC PE	AKS VS	CYCLI	C STEADY	у ву	VELOC	ITY	60			
	1666	10	20	30	40	50	6C	70	80	90	TOTAL
LESS	LESS	10	20	30	40	טכ	80	70	80	70	TOTAL
-40 -30											
-30 -20				1		2					3
-10				3		-					3
10			1	1	1						3
20											
30											
40 TOTAL			1	5	ı	2					9
TIME	C.3	4.2	12.0	58.0	26.7	19.5	1.3	0.	C •	0.	127.C
CY	CLIC PE	AKS VS	CYCLI	C STEADY	84	VELOC	ITY	65			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL -
LESS -40 -30 -20											
-10 10 20 30					1	ı					2
40 TOTAL					1	1					2
TIME	0.2	8.7	8.2	64.7	30.5	38.8	2.4	0.	c.	0.	153.4

				TA	BLE	K, con	td.				
,	CACFIC	PEAKS V	S CYC	LIC STE	ADY BY	r VELI	DCITY	70			
LESS -40	LESS	10	20	30	40	50	60	70	80	9(	TOTAL
-30 -20 -10 10 20 30		1		5 2	3						1 8 2
TOTAL		1		7	3						11
TIME	2.2	13-1	29.2	74.8	53.7	31.8	2.0	0.	<b>c</b> .	0.	206.8
c	YCLIC P	EAKS VS	S CYC	LIC STEA	DY BY	VELO	CITY	75			
LESS -40 -30	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-20 -10 10 20 30 40				2	1	1					4
TOTAL				2	2	1					5
TIME	5.7	18.8	40.1	123.1	69.7	37.3	1.9	0.	с.	0.	296.7
С	YCLIC PI	EAKS VS	CYCL	IC STEAD	Y 6Y	VFL00	ITY	60			
LESS -40 -30 -20	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-10 10 20 30 40			1	1	1	1					3
TOTAL			2	1	1	2					6
TIME	12.6	22.1	61.8	156.2	72.3	45.1	2.4	0.	С.	0.	372.5
CY	CLIC PE	AKS VS	CYCLI	C STEAD	Y 8Y	VELOC	177	85			
LESS -40 -30 -20	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-10 10 20 30	1		1		l i	1					3 2
TOTAL	1		1		2	1					5
TIME	43.9	38.1	91.6	228.3	95.3	50.4	3.2	0.	с.	0.	550.8

				T	ABLE	C, con	td.				
C	YCLIC P	EAKS V	S CYC	LIC STEA	CY BY	VELO	CITY	90	· · · · · · · · · · · · · · · · · · ·		
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS	LL 33	.0		30	40	,,,		••	0.0	,,,	10174
-40 -30											
-20			1	1 5	•	•					2
-10 10			1	כ	1 1	3					2 5 2
20											
30 40											
TOTAL			2	6	2	3					13
TIME	66.5	37.6	110.7	154.0	76.8	39.5	2.6	0•	С.	0.	487.7
c	ACTIC 6	EAKS V	S CYCL	IC STEA	DY BY	VELOC	:ITY	95			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30											
-20 -10		1			1	1					2
10											
20 30											
40 TOTAL		ī			2	-1					4
TIME	35.6	24.2	144.9	132.4	63.0	24.0	1.0	0.	c.	0.	425.3
	,,,,,			.,,,,,	0300		•••			••	
C	CLIC PE	AKS VS	CYCL	IC STEAD	Y BY	VELOC		100			
1555	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30 -30					1						1
-10			3		•						3
10	1		2								3
30											
40 TOTAL	1		5		1						7
TIME	4.9	39.6	184.3	123.0	53.5	7.1	0.2	0.	c.	0.	412.7
	CLIC PE	AKS VS	CYCL	C STEAD	Y BY	VELOC	ITY	105			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS	re 33	10	20	30	70	,,	.,,	• •	~~	. •	
-40 -30											
-20			•								
-10 10			1	ı							2
20											
30 40											
TOTAL			1	1							2
TIME	1.6	49.1	190.5	161.1	28.2	3.0	0.2	0-	C.	0.	433.7

				TAE	LE X	, con	d.				
c	YCLIC PE	AKS VS	CYCLI	IC STEADY	84	VEFOC	ITY	110			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS											
-40											
-30 -20											,
-10		2	1 2								1 4
10		•	•	1		1					ž
20				-		_					-
30											
40		13	- 1	_		1.2					_
TOTAL		2	3	1		1					7
TIME	1.1	14.4	86.5	98.0	15.7	1.3	0.2	0-	<b>c</b> •	0.	217.1
c	YCLIC PE	AKS VS	CYCLI	C STEADY	ВУ	VELOC	ITY	115			
	LESS	10	20	30	40	50	6C	70	80	90	TOTAL
LESS											
-40											
-30											
-20 -10						1					1
10											
20											
30											
40				.1							1
TOTAL				1		1					2
TIME	2.6	0.5	3.0	27.3	10.5	1.7	0.	0.	c.	0.	45.6

	TABLE XI  Cyclic Stick Peaks Versus Cyclic Stick Steady													
					Rotor					-				
	CYCLIC	PEAKS V	S CYC	LIC STE	ADY E	IY	RPM	LESS						
	LFSS	10	20	30	40	50	60	70	80	90	TOTAL			
LESS -40 -30 -20											• • • • • • • • • • • • • • • • • • • •			
-10 10 20 30 40			1		1						1			
TOPAL			1		3	1					4			
TIME	0.3	0.1	0.3	0.2	10.0	0.2	0.	0.	0.	Ú.	11.1			
С	YCLIC	PEAKS V	S CYC	LIC STE	ADY B	Υ	RPM	180						
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL			
-40 -30							2				2			
-20 -10		2	1 2	2	7 15	5					1 C 3 ?			
10 20 30				12	3	4	2				21			
40 TOTAL		2	3	22	25	9	4				65			
TIME	0.3	55.7	369.1	250.7	168.5	97.9	28.4	0.	c.	0.	970.5			
C,	YCLIC P	EAKS VS	CYCL	IC STEA	DY BY	, B	PM	185			:			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL			
LESS 40					_						,			
-30 -20			1	3	28	23	1 5				60			
-10 10	1	2	8	24 8	24 14	31 15	2				89 48			
20 30		1	1			ı					3			
40 TOTAL	1	3	17	1 36	70	72	9				1 208			
TIME	55.4	64.9	536.0	991.6	552.0	532.4	63.8	1.4	с.	0.	2797.6			
CY	CLIC P	EAKS VS	CYCL	IC STEA	DY BY	R	PM	190						
1500	LESS	10	20	30	40	50	60	70	80	90	TOTAL			
-40					-	•								
-30 -20		3	1	2	2	1					3 16			
-10 10	1 2	2	3 5	2	11 5	11 12					26 33			
20 30	_				2						2			
40 TOTAL	3	5	9	11	29	25					82			
TIME	124.2	165.7	135.7	356.3	360.1	213.7	28.1	0.	C.	0. 1	383.7			

				TA	BLE	(I, co	ntd.	· · · · · · · · · · · · · · · · · · ·			
	CYCLIC P	EAKS 1	S CYC	LIC STE	ADY BY	, ,	RPP	195			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30											
-20					1	1					ā
-10 10											
20											
30 40											
TOTAL					1	1					2
TIME	0.2	0.5	1.2	15.4	16.6	5.6	0.	0.	C •	0.	39.5
1	cuci le D		VS CYCI	LIC STE	ADY BY		₹ <b>P</b> #	TOTAL			
	CYCLIC P	EAR 3	/S C / C /	.16 316	101 01						112
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30			_	_	6	3 25	3				12
-20 -10		3 2	3 13	7 34	45 51	47	5				88 150
10		4	13	27	24	31	3				105
20		1	1		2	1					•
30 40				1							1
TOTAL	4	10	30	69	128	107	13				361
TIME	180.3	287.2	1043.7	1614.7	1108.8	850.1	120.2	1.4	с.	0.	5206.4

					TAL	LE X	II					
			Cvcl	ic Stic	k Pea	aks Ve	rsus	Airspe	eed			
			•			y Mis		<del>-</del>				
			ACC	etera	tion b	y WIIS	51011 3	egme	III.			
t	ACTIC &	PEAKS VS	ACCELE	RATION	BY MISS	ICN SEGI	MENT ASC	ENT				
	LESS	-15.0	-12.0	-9.0	-6.0	-3.0	3.C	6.0	9.0	12.0	15.C	TOTAL
LESS				ı		. 3	1					5
-40 -30					•	65	•					14 73
-20					, i	109	14					124
-10					;	44	,					48
10				1	•	17	•					18
20				•		5						• • •
30												= 1
4 C												
TOTAL				2	4	253	28					287
C	YCLIC P	EAKS VS	ACCELE	RATION	BY MISSI	ION SEGM	ENT PAN	UVR				
	LESS	-15.0	-12.0	-9.0	-6.0	-3.0	3.C	6.0	9.0	12.0	15.0	TOTAL
LESS												
-40						. 1	1					2
-30				ı	,	18	3	1				23
-2C -10				•	2	30 13	ī		Ţ			34
16				•	3	10	1					17 13
50					•	ĭ	•					1
30						•						•
40												
TOTAL				2	7	73	6	1	L			90

	TABLE XII, contd.												
c	YCLIC P	EAKS VS	ACCELE	RATION	BY MISSI	ION SEGM	ENT CES	CNT					
LESS -40	LESS	-15.0	-12.C	-9.0	-6.0	-3.0 2	3.0	6.0	9.0	12.0	15.C	TCTA	
-3C -20					_	60 142	2	1				6 14	
-10 10				2	2	95 76 10						9	
20 30 40													
OTAL				2	3	389	6	1				40	

								E XI								
				Cyc	lic S				ersu		rspe	ed				
						by M	Miss:	on S	egm	ent	_					
	ACTIC DE	AKS VS	VELOC	ITV AV	<b>*1551</b>	OH 45CH	ENT ASC	£4.7								
	LESS	40	60	65	70	75	0C	85	90	95	100	105	110	115	120	TOTAL
LESS -40	1	3	1	3	1		2	1		l l		1	1	ı	•••	5
-10	13	14	12	7	10	11	7		2	į		i				73 124
-10	37 16	•	ï	• 3	•	3	ž	ĩ		•		1				48
20 30	'5					ı			ì							18
TOTAL	100	46	19	23	20	51	ŞC	13	7	5		3	1	1		267
c	<b>VCL1C PF</b>	AKS VS	VELCC	TY	<b>#1551</b> (	CN SEGM	ENT MANI	UVR								
	LESS	40	60	65	70	75	8 C	45	90	95	100	105	110	115	120	TOTAL
LESS -40						ı							ı			2
-30	12	5	l l	1	2	2	2	1	1	1	1	1	3	L		23 34
-10	ij	4	1	1	ı	\$	1	1 2	i i	•	2					17
20 30	ί		•	•	•											ï
TOTAL	30	16	3	7	7	•	3	3	3	ı	,	1	٠	1		90
c ·	YCLIC PE	AKS VS	AEFOC	LTY BY	#15510	DN SEGM	ENT CESO	CNT								
	LESS	40	60	65	70	75		45	9C	45	100	105	110	115	150	TOTAL
LESS -40			ı	_	_	1		L	_	1						5
-30 -20	31	12 25	2	11	12	. 5 11	17		3	2	2	3	L l	1		146
-10	57	12	7	2	5	l I	2	3	2	1	1	1	1			80
20 30	•	i				·										10
OTAL	149	53	10	10	31	19	24	20	14	11	11	11	3	1		401

		-	Stick F	BLE XIV Peaks Ver dission Se	sus Ro	tor		
(	YCLIC PE	AKS V	'S RI	PM BY	MISS	ION SEG	MENT A	SCENT
	LESS	160	185	190	195	200	205	TOTAL
LESS		2	3					5
-40	1	5	6	2				14
-30		21	44	8				73
-20	Ī	33	78	12				124
-10	2	13	27	6				48
10		8	7	3				18
20		2	3					5
30								
40 TOTAL	4	84	168	31				287
C	YCLIC PE	AKS V	S RP	M BY	MISSI	ON SEGM	IENT MA	MUVR
	LESS	180	185	190	195	200	205	TOTAL
LESS			_					
-40		_	2		_			2
-30	•	7	9	4	3 2			23
-20	1	8	12	11	2			34
-10	1	1 2	9	6 5				17
10 20		2	6 1	י				13
30			1					1
40								
TOTAL	2	18	39	26	5			90
	•	10	3,	20	J			70
CY	CLIC PEA	iks vs	RPI	4 BY	MISSI	DN SEGMI	ENT DE	SCNT
	LESS	1 80	185	190	195	200	205	TOTAL
LESS				_ , _				2
-40		1	2	1				4
-30		17	35	11				63
-20	1	31	85	27	2			146
-10	1	17	49	28		1		96
10	1	20	37	20			2	80
20		2	6	1		1		10
30								
40	_				2	_		2223100
TOTAL	3	83	216	88	2	2	2	401

		Collec		ick Pe				tive St	ick		
	OLLECTIV	AE DEAVE									
	LESS	10	20	30	40	.vcc16 s 50	60	70	80	90	TOTAL
-40 -30 -20 -10					1	1 1 3					2 2 3
20 30 40 TUTAL					2	5					7
TIME	0.	0•	0.	0.7	91.3	84.7	3.6	0.	с.	0.	180.3
С	OLLECTIV					ACTIC 2.		10			
LESS -40	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-30 -20 -10 10 20				1	1 3 6 1	3 5 1					1 7 12 2
40 TOTAL				2	11	9					22
TIME	0.	0.	0.2	7.2	84.0	181.6	14.2	0.	c.	0.	287.2
C	OLLFCIIV	E PEAKS	VS COL	L.STEAD	Y RY C'	YCLIC ST	EADY	20			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30 -20 -10 10			1	1 1 2 3 3	2 8 3 3	4	t				1 3 1C 12 6 1
30 40 TOTAL			1	11	16	4	ì				33

76.1

0.

0.

43.2 147.7 773.8

0. 1043.7

TIME

0.

0.

2.9

				TA	BLE X	IV, co	ntd.				
C	OLLECTIV	E PEAKS	s vs co	LL.STE	DY BY	CYCLIC S	TEADY	30			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30 -20				1	2	_					3
-10			1	5	18 34	3 12	1				27 56
10				5	10						15 1
30					•						•
40 TUTAL			1	19	65	15	2				102
TIME	0.	0.	5.6	107.3	854.9	601.0	45.8	0.1	с.	0.	1614.7
С	OLLECTIV	E PEAKS	vs co	LL.STEA	DY BY	YCLIÇ S	TEADY	40			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40					_	1					1
-30 -20			1	1 2	5 17	9					6 29
-10			4	22	23	19	1				69
10 20				6	9	6					21
30											_
TOTAL			5	31	55	36	1				128
TIME	0.	0.	30.9	206.7	568.1	276.1	26.9	0.	<b>c</b> •	0.	1108.8
C	DLLECTIVE	PEAKS	VS CO	LL.STEA	DA BA C	YCLIC ST	EADY	50			
	LESS	10	20	30	40	50	60	10	80	90	TOTAL
LESS -40					2						2
-30					2		1				3
-20 -10			1	3 21	11 8	3	1				17 34
10			i	4	4	3	•				12
20 30				1	2						3
40			1		20						**
TOTAL		•	3	29	29 428.3	8	47.6	0.	c.	0.	71 850-1
	0.	0.		236.7						0.	070.1
co	LLECTIVE					CLIC ST		60	24	722	
LESS	LESS	10	20	30	40	90	60	70	80	90	TOTAL
-40											
-30 -20					3						3
-10			•	5	4	1					9
10 20 30			1		· ·	t.					,
40 FOTAL			1	5	8	1					15
			1.4	23.5	80.4	10.8	4 • 2	0.	c.	0.	120.2

TABLE XVI Collective Stick Peaks Versus Collective Stick Steady by Density Altitude COLLECTIVE PEAKS VS CULL. STEADY BY ALTITUDE LESS LESS 10 30 20 50 60 70 80 TOTAL 90 LESS -40 3 -30 6 7 24 21 7 -20 -10 3 24 34 13 65 10 15 20 30 40 TOTAL 10 32 61 22 126 TIME ٥. ٥. C, 20.3 1135.6 0. VS COLL. STEADY BY ALTITUDE COLLECTIVE PEAKS 90 TOTAL 70 80 LESS 10 20 30 40 50 LESS -40 -30 3 29 18 3 12 -20 64 27 -10 23 30 10 40 TUTAL 129 19 3 1593.0 TIME 0. ALTITUDE 2000 VS COLL. STEADY BY COLLECTIVE PEAKS 90 TOTAL 60 70 80 50 20 30 40 LESS 10 LESS 5 -30 32 10 20 19 -20 65 30 10 20 30 40 123 37 2 59 1 TOTAL 0. 2294.3 893.3 1087.5 135.7 C. 0. TIME

### TABLE XVII Collective Stick Peaks Versus Collective Stick Steady by Airspeed

					teady b	y 1111 c	pecu				
	COLLECTIVE	PEAKS	vs	COLL. S	TEADY BY	VELO	CITY	LESS			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40				1	•						
-30					2 5		1				3 6
-20 -10			1	2 17	17	6					26
10			2	11	26 15	25 9	2				7C 37
20 30				2	4	1					7
40											
TOTAL			3	33	69	41	3				149
TIME	0.	0.	4.2	110.9	804.2	322.0	84.7	0.1	с.	0.	1326.1
c	OLLECTIVE	PEAKS	vs (	CULL. SI	TEADY RY	VELOC	114	40			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS	223	••	20	30	40	30	80	,,	80	40	TOTAL
-40 -30					2						•
-20				3	13						2 16
-10 10			Ł	7	6						14
20					•						
30 40											
TOTAL			1	10	25						36
TIME	0.	<b>C</b> •	7.1	40.7	61.7	20.4	3.6	0.	0.	0.	133.5
r	NI 1 FC 1 1 V F	DFAKS	us (	CULL. ST	EADY BY	VELOG	174	60			
	OLLEGIIVE	PEAKS									
LESS	LESS	10	20	30	40	50	60	70	RO	90	TOTAL
-40											
-30 -20				1	1 2						1
-10			1	į	2 6						8
10 20 30				1							1
40 TUTAL			1	3	9						13
TIME	0.	0.	2.8	33.4	58.4	24.6	2.8	0.	c.	0.	122.C

				TAI	BLE XV	II, co	ntd.				
C	OLLECTIVE	PEAKS	VS	כטננ. י	STEADY BY	VELO	CITY	65			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30				,	•						
-20 -10			1	2 3 7	1 9 5	1					1
10				•	,						13
30 40											
TOTAL			2	12	15	ı					30
TIME	0.	0.	3.5	66.7	56.1	26.4	0.7	0.	0.	0.	153.4
C	OL L E G T I VE	PEAKS	vs (	COLL. S	TEADY BY			70			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30				1	2						3
-20 -10				1	2 4 5	1					12
10 20					1						,
30 40				_	••	_					2
TOTAL	LI.			8	12	44.3	4.1	0.	0.	0.	206.
TIME	. 0.	0.	7.8	66.8	83.7	44.3	7	••	••		
co	DLLEGTIVE	PEAKS	vs c	OLL. S	TEADY BY	VELOC	ITY	75			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40						1					1
-30				3	2	2	1				12
-10 10 20 30			1	8	3						4
40 OTAL			1	14	. 6	3	1				25
IME	0.	0.	5.9	72.3	134.4	75.0	9.0	0.	c.	0.	296.7

	_			TAB	LE XV	II, co	ntd.				
	OLLECTIVE	E PEAKS	vs	CULL. S	STEADY B	Y VELO	CITY	80			
1555	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40 -30											
-20				4	5 8	2					7 15
10 20 30				2	1	1					4
TOTAL				6	14	6					26
TIME	0.	0.	6.9	69.3	173.9	104.1	18.3	0.	0.	0.	372.5
					*************	w veto	C 1 T U	a s			
	OLLECTIVE	PEAKS	VS 20	30	TEADY B	Y VELO 50	60	85 70	80	90	TOTAL
LESS -40	6533		20	30	40	50	80	10		70	10172
-30 -20					2	1					3
-10			2	5	7		1				15
30											
TOTAL	_		2	5	9	1	1				18
TIME	0.	0.	6.4	67.2	297.9	163.2	16.0	0.	С.	0.	550.8
C	OLLECTIVE	PEAKS	vs c	OLL. S	TEADY BY	VELOC	CITY	90			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30					1						1
-20 -10 10			1	2	5 3	1					5 6 1
20 30											
TOTAL			1	2	9	1					13
TIME	0.	0.	5.3	44.7	205.3	216.7	15.6	0.	c •	0.	487.7

		··	<del></del>	TAB	LE XV	II, cor	ntd.				
C	OLLECTIVE	PEAKS	vs	COLL. s	TEADY BY	V VELO	CITY	35			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30											
-20 -10				2	2 5	1					3
10				•	í	•					i
20 30											
40											
TOTAL				2	8	2					12
TIME	0.	0.	3.8	31.6	153.4	224.8	11.7	0.	0.	0.	425.3
c	OLLECTI VE	PFAKS	٧S	COLL. S	TEADY BY	/ VELO	CITY	100			
·											
LESS -40 -30	LESS	10	20	30	40.	50	60	70	80	90	TOTAL
-20					51	1					1
-10 10				1	4 2	3					8
20				_	_						_
30 40											
TUTAL				2	6	4					12
T I ME	0.	0.	0.	20.0	117.1	270.4	5.2	0.	c.	0.	412.7
CI	OLLECTIVE	PEAKS	vs (	COLL. S	TEADY RY	VELO(	:ITY	105			
	LESS	10	20	30	40	50	60	70	80	90	TOTAL
LESS -40											
-30											
-20 -10						1					1
10 20 30					2	1					3
40 DTAL					2	6					.8
01.45											

				TAB	LE XV	/II, co	ntd.				···
co	DLLECTIVE	PEAKS	vs c	JLL. ST	EADY BY	VELOC	ITY	110			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30											
-10					1	1 6					1 7
20					1	2					3
30 40 OTAL					2	9					11
IME	0.	0.	0.1	0.		176.5	15.7	0.	0.	0.	217.1
			•••	•			.,,,	••			
C	OLLECTIVE	PEAKS	vs c	OLL. S	TEADY BY	v velo	CITY	115			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30						•					
-20 -10						1					1
10 20 30											
.40 TUTAL						2					2
TIME	0.	0.	0.	0.	5.3	31.7	8.5	0.	c.	0.	45.6
(	COLLECTIV LESS	E PEAK:	S VS	30	STEADY 6	50 VELI	60	120	80	90	TOTAL
LESS -40			20	,,	40	,,	Ū.	•••		,,	1014
-30 -20											
-10 10							1				1
20 30 40											
TOTAL							1				1
TIME	0.	0.	0.	0.	0.	10-2	12.5	0.	с.	0.	22.6

		TABL	E XVIII		
Collective	Stick	${\tt Peaks}$	Versus	Collective	Stick
			Rotor R		

Steady by Rotor RPM	
L. STEADY BY RPM LESS	
30 40 50 60 70 80 9	TOTAL
1 1	l 2
1 2	3
0.1 5.5 4.8 0.7 0. C. 0.	11.1
L. STEADY BY RPM 180	
30 40 50 60 70 80 90	TOTAL
9 2	11
4 12 8 1 4 9 5	25 18
	10
8 30 15 1	54
3.9 356.1 511.3 69.0 0.1 C. 0.	970.5
L. STEADY BY RPM 185	
30 40 50 60 70 80 9	
1 2	3
1 5 1	7 49
9 31 8 30 44 32 2	110
8 10 7	21
2 2 1	5
51 94 48 3	201
7.3 1130.3 1192.1 101.3 0. 0. 0.	2797.6
L. STEADY BY RPM 190	
30 40 50 60 70 80 90	
1	1
2 7 4 19 6 1	9 33
25 21 3 1	55
5 7 1	13
2	_
2 36 56 13 2	113

				TAI	BLE X	VIII,	ontd.				
	COLLECTIV	E PEAK	s vs	COLL.	STEADY	ву г	PM	195			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30 -20 -10 10 20 30					1 1 2	l.					1 1 2
TOTAL					4	•					4
TIME	ů.	С.	2.2	5.4	25.7	6.2	0.	0.	c.	0.	39.5
	COLLECTIVE	PEAKS	٧S	COLL.	STEADY	BY R	PM	200			
LESS	LESS	10	20	30	40	50	60	70	80	90	TOTAL
-40 -30											
-10				1	1						1 2
10				_							•
30 40											
TOTAL				1	2						3
TIME	0.	0.	0.	2.7	1.1	0.3	0.	0.	С.	0.	4.1
•	OLLECTIVE	PEAK 5	۸2	COLL. S	STEAUY			TOTAL	•0	00	70741
LESS	LESS	10	20	30	40		60	70	80	90	TOTAL
-40 -30				1 3	12	1	1				16
-20 -10			2	13 60	61 79	18	1				95 194
20			2	18	28 4	14					62 7
30 40 TOTAL			11	97	186	78	6				378
TIME	o.	0.	54.1		2256.1			0.1	c.	0.	5206.4

## TABLE XIX Collective Stick Peaks Versus Airspeed Acceleration by Mission Segment

49C	101
20	
10	
COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. MANUVR  LESS -15.0 -12.C -9.0 -6.0 -3.0 3.C 6.0 5.0 12.0 15.6  SS 1 2 4 30 7 20 40 10 2 1 40 10 10 10 10 10 10 10 10 10 10 10 10 10	
COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. MANUVR  LESS -15.0 -12.C -9.0 -6.0 -3.0 3.C 6.0 5.0 12.0 15.  SS 60 1 2 4 30 7 20 20 1 2 34 10 10 10 22 1 20 2 4 30 2 22 1 20 20 1 4 30 2 20 1 30 2 20 1 30 30 3 2 40 40 40 40 40 40 40 40 40 40 40 40 40 4	1
COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. MANUVR  LESS -15.0 -12.C -9.0 -6.0 -3.0 3.C 6.0 5.0 12.0 15.  SS 6 40 1 2 4 30 7 20 20 1 2 34 10 10 10 22 1 20 4 30 2 2 40 AL 2 11 102 1   COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0  SS 1 22 50 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 22 51 1 25 51 1 2	
COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. MANUVR  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.0 6.0 5.0 12.0 15.0 15.0 12.0 15.0 12.0 15.0 12.0 15.0 12.0 15.0 12.0 15.0 12.0 15.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12	
COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 \$.0 12.0 15.0 15.0 10 10 10 10 10 10 10 10 10 10 10 10 10	2
SS	
1 2 4 30 7 20 20 1 2 34 10 10 10 22 1 20 4 30 2 4 30 2 4 30 30 4 40 AL 2 11 102 1  COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.0 6.0 9.0 12.0 15.4 55 7 31 60 2 20 119 76 1 1	TCI
7 20 20 1 2 34 10 10 10 22 1 20 4 30 2 40 AL 2 11 102 1  COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 55 60 1 22 7 31 20 19 20 119 20 76 1 1	
10 10 10 10 10 22 1 20 4 30 2 40 30 2 40 40 40 40 40 40 40 40 40 40 40 40 40	
22 1 20 4 30 2 40 40 AL 2 11 102 1  COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 15.0 1 22 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
20 30 40 40 AL 2 11 102 1  COLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 15.0 12.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15	
GOLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 15.0 7 31 30 2 20 119 15 165 10 76 1 1	
GOLLECTIVE PEAKS VS ACCELERATION BY MISS. SEG. CESCNT  LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 15.0 1 22 7 31 30 2 20 119 20 15 165 160 76 1 1	
LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15	ı
LESS -15.0 -12.0 -9.0 -6.0 -3.0 3.C 6.0 9.0 12.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15	
\$\$ \$\frac{1}{40}  \frac{22}{7}  \frac{31}{30}  \frac{2}{20}  \frac{119}{15}  \frac{165}{16}  \frac{1}{1}   \frac{1}{1}  \frac{1}{1}  \frac{1}{1}  \frac{1}{1}  \frac{1}{1}  \frac{1}{1}  \frac{1}{1}  \frac{1}{1}  \frac{1}{1}   \frac{1}{1}   \frac{1}{1}                   \qu	
7 31 30 2 20 119 20 15 185 10 76 1 1	TOT
2 20 119 20 15 185 10 76 1 1	
20	
10 76 1 1 10 122 1	
1U 126 L	1 2
36	1
30 5	1 2
40 AL 2 43 596 2 1	1 2

## TABLE XX Collective Stick Peaks Versus Airspeed by Mission Segment

C	06666111	E PEAKS	VS VEL	CCITY 6	r #1551	CN SEGM	ENT ASC	ENT								
	LESS	40	6 C	65	70	75	80	85	90	95	100	105	110	115	150	TOTAL
-40 -30	1	1		ı	l	ı	ī			ι						6
-20 -10	3 20	i	2	1 2	5	š 3	5	5	2	ì	l					28 38
10	63 38	26 12	3	10	5 L	3	ા <u>લ</u> દ	l l	2	2			1	2		60
30 40	1	3	1											_		13
TCTAL	135	46	10	14	18	16	17	•	•	•	1		1	3		216
c	DLLECT[ v	E PEAKS	VS VEL	uC(17 8	v ≃1551 70	CN SEG#	ENT FAN									
LESS -40	(633	3	ı	i i	2	13	50	45 1	90	95	160	105	110	115	150	101AL 6
-36	4	7 7	Š	;	i	5	2		1		1	-				27
-10	11	2	2	2	i 2	1	2	1	ı		•	•	,			10
30	2	ı	t													4 2
40 1014L	24	22	15	11	ð	ıı	e	7	5		2	ı	2			116
co	OLLEG¶1 <b>v</b> e	PEAKS	VS VELO	CITY 81	*15510	IN SEGMI	ENT CESO	.n.t								
LESS	LESS	4C	60	65	70	75 3	AC E	85	70	95	LCC	105	110	115	120	TOTAL 23
-40 -30	2	97	5 20	10	5	6	1	3	,							38 141
-10	19	58 15	30	28	24	13	9	5	11	3	1		1	1		20C
10	88	3	6 2	2	5	2	4	•	i	ı	i	3	3	-		123
30 40 OTAL	184	142	*1	56	62	38	27	20	14	8						5
U1#L				70	106				16	•	2	3	•			644

### TABLE XXI Collective Stick Peaks Versus Rotor RPM by Mission Segment

		_							
•	COLLECTIVE	PEAKS	٧S	RPM	BY N	MISSION	SEGMENT	ASC	ENT
	LESS	1 60	185	190	1	195	200 2	05	TOTAL
LES!									
-40			2	1				1	4
-30	=	1		5					6
-20			23	5					28
-10		16	14	7			1		38
10		42	64	16					127
20		27	25	5					60
30		4	7	1					13
		50	126	40			1	1	274
TOTAL	. 9	70	135	40			1	1	276
	COLLECTIVE	PEAKS	٧S	RPM	BY N	HISSION	SEGMENT	PAN	UVR
	LESS	160	105	190		195	200 2	0.6	FOTAL
LESS		160	185	190		190	200 2	05	
-4(		1	3	3					6 7
-30		1	14	11		1			27
-20		i	10	26		•			37
-10		4	3	3					10
ic		5	11	4					23
20		2	2						4
30		1							2
40	)								
TOTAL	. 5	16	47	47		1			116
	COLLECTIVE	PEAKS	٧S	RPM	BY M	LISSION	SEGMENT	DESC	CNT
	LESS	180	185	190	1		200 20	05	CTAL
LESS		10	1	6		2	_		23
-40		5	19	9		2 3	1		38
-30		22	77	38		3	1		141
-20		15	111	70		2	2		200
-10		18	41	18		,	ı	2	78
10 20		33 12	61 17	23 6		1	ı	2	123
30	-	12	4	0					36 5
40		•	~						9
TOTAL		116	331	170		10	5	2	644

# TABLE XXII Gust n<sub>z</sub> Versus Airspeed by Mission Segment by Altitude by Gross Weight

N	z GUST	PEARS	VS VEL.	UY #15	s. SFG.	ASCENT.	ALT.	Lr55, WG	F. 115	5						
	1155	40	0 60	65	70	15	нС	e h	90	45	100	105	110	115	120	TOTAL
2.4																
2.0																
1.8																
1.6																
1.4																
1.2								1								t
0.7								1								ı
0.5																
0.4																
THESS								7								2
N	£ GUST	PEAKS	AP AEF	HY M15	s. sec.	ASCENT,	ALT.	LESS, WG	1. 3000	0						
2.4	LESS	4(	0 60	65	10	75	80	85	90	95	100	105	110	115	120	FOTAL
2.2																
L.H																
1.7																
1:5																
1.2									1							
0.8									•							1
0.6																
0.5																
LESS																
IOTAL									1							ì
"	/ GI ST	PEAKS	VS VFL.	84 MIS	S. SEG.	ASCENT,	ALT.	1000, WG	t. LES	s						
	1155	40	0 60	65	70	75	e C	#5	90	45	100	105	110	115	120	FOTAL
2.2																
1.5																
1.7																
1.5																
1.3			1			,										-
1.7 0.8			'			?		1		1						٨
0.1						•			ı							,
0.5																
0.7																
TOTAL			ł			1		1	,	1						н
N	2 6051	PEAR S	vs ///.	07 MISS	S. Shi.	ASILINI.	ALI.	1000. mu	1. 260CI	1						
	LESS					15					101	105	110	115	120 1	TUTAL
2.4												-				
2.0																
1.7																
1.6																
1.3																
1.2						1										1
0.7																
0.4																
0.2																
TOTAL						ı										٠, [

							TAI	BLE	XXII	, co	ntd.						
	ıs enz	ı pe	ARS VS	VEL.	OV PISS.	SEG.	ASCENT,	ALT.	1000, wi	1. 3000	0						
2.4	LES	\$	40	40	45	70	75	40	45	90	95	100	105	110	115	150	TOTAL
2-2 2-0 1-0 1-7 1-6 1-3 1-2 0-7 0-6 0-5 0-2 1655							1										1
•								ALT.	IOCO, WG	1. 3400	0						
2.4 2.2 2.0 1.4 1.7 1.6 1.5	1+5	<b>S</b>	40	<b>♦</b> 6	63	70	15	€C	**	90	45	100	105	110	115	150	TOTAL
0.8 0.7 0.6 0.5 0.4 0.7 LESS			ı														1
		06.4		461	Y MISS.	***											
2.4 2.7 2.0 1.7 1.6 1.5	1651		40	<b>₽</b> 0	4 P(55.	70	SCFNT, A	80	85	• 42000 <del>9</del> 0	95	100	105	110	115	150	TOTAL
1.3 1.7 0.H 0.7 0.6 0.5 0.4 0.7 LESS					,		1	1									•
TOTAL					5		1	1									•
N2	GUST	PEAI	KS VS 1	ÆL. MY	r #155. 5	SEG. AS	CFNT. A	LT. 20	ica, wgt.	LESS							
	LFSS		40	<b>♦</b> 0	65	70	75	AC	A5	90	95	ı oc	105	110	115	120	TOTAL
2-4 2-7 2-0 1-8 1-7 1-6 1-5 1-3 1-2 0-8 0-7						1		3									•
0.7 LESS TUTAL						ı		,									

							TA	BLE	XX	ζII,	con	td.						
					NY #155					4	34.000							
	LE59		40	60	65	. 510			ic 200	85	90	95	100	105	110	115	120	1014
2.4 2.2 2.0																		
1.8 1.7 1.6																		
1.5																		
1.3 1.7 0.8						1	)											
0.7												1						
0.4 0.2 LESS																		
TOTAL							3					ı						
NZ	GUSI	PEAK	5 VS	V&L. 1	HY PISS	SFG.	ASCENT	, ALT.	\$0C0	, wgt.	30000							
2.4	LFSS		40	60	65	70	75	h.		85	90	95	loc	105	110	115	120	FUTA
2.2																		
1.6																		
1.3												2	ı					
0.4																		
0.4																		
UTAL												2	1					
NZ	60 <b>51</b>	PFAK	5 V S	VFL. I	IV #155.	SEG.	ASCINT	, ALT.	2000	, wgt.	34000							
2.4	1155	1	40	60	65	10	75	AC		H 5	90	95	100	105	110	115	120	TOTAL
2.2 2.0 1.8																		
1.7 1.6 1.5																		
1.3											1							1
0. H 0. 7																		
0.5																		
0.7 LFSS DTAL											1							1

<del></del> -	·							TAB	LE	XXII	con	td.				·		
N	, aus	1 21	· AK S	V	FL. H	V HISS	. Stir.	MANUVR.	ALT.	LCSS. W	GI. LE	55						
	LES		40		60	65	70	75	нС		90	45	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.0 1.7 1.6																		
1.3										ī	ı							
0.8 0.7 0.6 0.5										1				1				
0.7 L155 UTAL										,	1			1				
N &	rausi	PE	AK 5	v5 v1	L. H	Y #155	src.	MANUVR.	AL I.	LESS, W	it. 3000							
7.4 2.7 2.0 1.8 1.7 1.6 1.5	1159	•	40		60	65	10	15	МC	#5	<b>3</b> 0	75	100	105	110	115		TOTAL
0.7								ı										
O.Z LESS DTAL								1										
Bo I	ens.			u	F1 . 10	v MISS	. 516.	PANUVR.	AL I.	inco, h	51. 1000	10						
.,,	LES		40		60	65	70	75	нс		90	95	100	105	110	115	120	TOTA
2.4 2.7 2.0 1.8 1.7 1.6 1.9 1.4		_	-					1										
0. H 0. 7 0. 6 0. 5 0. 4 0. 7 LESS								ı										

	<u> </u>				<u> </u>	TAI	3LE	XXII,	COI	ntd.						
	r GUST LESS	PEAKS VS	vēl. 8	¥ MISS.	SEG. #	IANUVR, 75	ALI.	2000, wGT.	26000	95	ıcc	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5																
1.3 1.2 0.8 0.7 0.6 0.5		i	1	2												1
0.2 F55 TAL		ı	i	2												•
٨	2 6651 LESS		60 4+L. U	V MISS.		DESCRT,	AL1.	LESS, WGT.	, LES!	S + 9 5	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4	(1)		30	72		• • •										
1.2 0.8 0.7 0.6 0.5 0.4 0.2 ESS								ı			l					:
DFAL								l			•					i
N	ız GUST	PEAKS V	S VEL. H	W MISS.	SFG.	rescut,	ALT.	LESS, WGT	. 2600	0						
2.4 2.7 2.0 1.8 1.7 1.6 1.5	1 # 55		60	65	70	15	60	85	70	45	100	105	110	115	120	FOTAL
1.3 1.7 0.8 0.1 0.6 0.5 0.4						1			1							,
FSS						ı			,							1

								TAE	BLE	ХХЦ	, cor	ntd.				-		
	it gus	I PE	AKS V:	vec.	87 (	P155.	stc.	DESCRI,	41.	1000, 60	tes	s			_			
2.4	LES		40	40		45	70	is	•0	#5	90	95	100	105	110	115	120	TOTAL
2./ 2.0 1.0 1.7 1.6 1.5 1.3 0.0 0.7									1									111
O.2 LFSS FUTAL									2									
•	e Gusi	PE	AKS V	VEL.		455.	sec.	DESCRT,	ALT.	toco. wG	f. 2400	0						
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.3 1.7 0.8	LESS	•	40	40		65	10	75	ec	•>	90	95	100	105	2	115	170	FUTAL 3
0.6 0.5 0.4 0.2 LFSS IUTAL															,			,
N	ł GUS1	PE	/#; A?	VEL.	44 W	155.	StG. (	DESCRI,	ALT.	loco, uc	T. 30900							
2.4 2.2 2.0 1.0 1.7 1.6 1.5	1+55		40	•0	8	65	70	75	#C	45	70	*5	loc	105	110	115	120	TOTAL
1.3 1.2 0.4 0.5 0.4 0.2 LESS								•		1	l L			•				3
TOTAL								ı		1	2			ı				•

							TAB	LE X	XII,	con	td.						
47									nen, kut.			100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6	LF \$5		40	40	65	<b>1</b> 0	75	ис	85	40	45	100	16.7			•••	
1.4								7			ι						4
0.8 0.7 0.6 0.5								t						•		1	1
0.2 LFSS INTAL								•			ı			ı		1	•
N	Z GUS LES		40 40	VEL.	NY MISS 65	. SEG. 70	DESCHT, 75	ALT. Z	000, wg1	. 260CG							
2.4 2.2 2.0 1.8 1.7 1.6 1.3 1.4											45	100	105	110	115	1217	TOTAL
0.H 0.7 0.6 0.5 0.4							1		t								1
LESS UTAL							ı		1								,
	vz Gus	T PI	AKS V	S VEL.	HY MISS	. SEG.	DESCNT.	ALT. 2	'000, WG1	. 3000	0						
2.4	LES		40	60	65	70	75	#0	85	90	95	100	105	110	115	150	TOTAL
2.2 2.0 1.6 1.7 1.6 1.5 1.4																	
0.7 0.6 0.5							t		•		i	ı	ı				1
CFSS TilfAL							1		1		1		11				5

									TA	BL	E	XXI	I, c	on	td.								
	NZ	GUSI	PEAR	(5 V	S VEL	. 87	MISS.	. SEG.	DESCN	T, ALT	. 2	0CO, W	GT. 36	000									
2.4		LESS		40	66	0	65	70	7	5	e C	85	90	)	95	100	10	5 1	10	115	120	701	fal
2.2 2.0 1.8 1.7 1.6 1.5																							
1.3 1.2 0.8 0.7 0.6 0.5				ı																			1
C.2 LESS TCTAL				ı																			
NZ (	GUS	T PE	AKS V	s ve	L. B	/ #IS	s. se	EG. 0E	SCNT,	ALT.	5000	. wet.	38000										
2.4	LES	S	40		60	65		70	75	80	116	15	90	95	1	00	105	110	115	•	120 T	OTAL	
2.0 1.6 1.7 1.6 1.5 1.4												ı											
0.8 0.7 0.6 0.5 0.4																							
LESS DTAL												1										ı	
N		UST ESS		. VS	VEL.	BY	4155.	5+ G.	STEACY	, ALT. 80		55, WG H5	7. 340 90		95	100	105	110		15	120	TOTA	
7.4 2.2 2.0 1.6 1.7 1.6												• •					•••			•	•••		-
1.4 1.3 1.2 0.8 0.7 0.6 0.5 0.4																	1	ā					2
LESS TOTAL																	1	2	?				3
TIME	3	7.4	5.	ı	2.2	4	.4	6.2	12.4	9.4		9.3	4.0	5.	4	4.7	31.5	21.0	0	. 0	0.	160.	7

								TAE	LE	XXI	, co	ntd.						
	N	ł GU:	ST #	EAKS	VS VEL	. 87 FI	SS. SE	G. STEAC	DY, ALT	. LESS	, wgt. «	42000						
		LES	5 5	40		0 6	5	70 1	15	00	15	•0	<b>95</b> 10	0 109	110	111	12	0 10
2. 2. 1. 1.	0 0 7 6 5																	
1. 1. 0. 0.	3 2 8						1	ı			1	1		1				
0. 0. LES	. 4						1	1			1	1		1				
TEME		31.		4.4	4.			.5 3.	1 4.	.0 2			.5 0.			0.	0.	•
N	2 G	UST (	PEAI	15 VS	vEL. B	Y MISS.	SEG.	STEADY,	ALT.	1000, W	6 <b>7.</b> LE:	55						
2.4	L	ESS		40	60	45	70	75	00	45	90	15	100	105	110	115	120	TOTAL
2.2 2.0 1.6 1.7 1.6													ţ					1
1.3					1	1	2	3	3	•	1	1	1	2				41
0.7 0.6 0.5 0.4							3	1	ı	3	i	12	•	•				30
DTAL					1	ι	5	5	4	•	17	55	17	•				87
1 ME	l l	•.0	•	.0	1.4	4.3	16.6	18.8	22.5	20.0	17.6	17.7	13.7	7.9	1.4	0.4	0.	274.5
	<b>.</b>	Aus T	96		k VFI.	AV MISS	. LFG.	STEADY	. ALT.	1000.	WGT. 241	000						
		LESS		40	60	65	70		•0			15	100	105	110	115	120	TOTA
2.4 2.2 2.0 1.0 1.7 1.6																		
1.3						ı	l i	1	1	10		10	10	1 5	4	1		•
0.0				1		ı	1	•	•	7	10 1	1	ı	5	•	ı		•
LESS TOTAL				1		2	3	13	13	17	19	16	10	13	•	2		12
TIME		77.3		9.0	12.7	22.0	24.9	35.7	49.1	51.2	40.3	36.9	25.4	24.1	11.2	3.6	0.3	534.

						TA	BL	E XX	II,	conto	1.					
																-
ħ	12ua St	PEAKS V	> V+L.	HY MISS	. SEG.	STEAUY,	AL (.	LESS, B	uT. Lt	55						
2.4 7.7 7.0 1.8 1.7	LESS	40	សប	65	70	15	н(	e h	90	45	100	105	110	115	120	FOTAL
1.4 1.3 1.2 0.8 0.7		2	1	1	i	i		1	ı	1	1					6 3 7
0.5 0.4 0.2 LESS		2	1	ı	ì	1		ı	1		2					12
IME	95.0	5.3	5.0	9.1	<b>(8.1</b>	6.0	3.6	9.0	8.9	9.6	6.6	1.1	1.9	0.2	0.	176.2
N						S FE ADY,										
2.4 2.2 2.0 1.0 1.7 1.6	1155	40	•0	•5	70	75	<b>8</b> €	•5	•0	95	100	105	110	115	170	TOTAL
1.3 1.2 0.8 0.7 0.4 0.5 0.4				ı	1	2	1	ı	•	,	17 7	2 5	1			41 21
ITAL				1	t	5	2	1	•	14	26	•	2			44
l M É	221.0	25.0	16.2	20.5	24.6	20.0	15.8	26.0	24.5	34.4	20.7	11.2	4.4	2.9	1.5	479.9
N	2 GUST	PEAKS VS	VEL. F	NY MISS.	seg. :	STEADY,	ALT. (	LESS, W	ii. 3000	:0						
2.4 2.2 2.0 1.8 1.7	LESS	40	60	45	70	75	●0	<b>e</b> 5	•0	••	100	105	. 110	115	120	TOTAL
1.3								_	_	ł	1	\$				
0.0 0.7 0.6 0.5 0.4		1		1		ı	i.	2	3	•	<b>5</b> ,					4
ESS		1		1		1	t	2	•	2	7	2				22
ME	47.5	3.5	4.0	0.1	12.9	14.7	16.6	14.0	13.0	7.9	6.3	27.0	24.0	0.5	0.	223.0

						TA	BL	E XX	II, c	onto	1.					
N2	t GUST	PEAK! VS	VEL.	BY PISS.	SEG.	STEADY,	ALT.	1000. w	GT. 300	00						
	LESS	40	60	65	70	75	но	85	90	95	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5																
1.3				1		1	1	4			- 1	l l	1			11
0.7								2	ı	4	5	3				15
0.6											ŧ	l l				1
LESS				1		1	1	7	2	4	7	7	1			33
TIP!	40.8	13.4	<b>0.</b> 7	5.5	4.9	A.7	9.7	19.0	7.1	8.8	39.2	60.1	55.1	9.5	0.	290.8
N1	t GUST	PEARS VS	VEL.	NY MISS.	SEG.	STEADY,	ALT.	1000, w	it. 3400	0						
2.4	LESS	40	•0	65	70	75	90	45	90	45	Loc	105	110	115	120	TOTAL
2.2 7.0 1.8 1.7 1.6 1.5 1.4								3	2							4
0. K					l l	2	4	1			1	ı				11
0.6 0.5 0.4 0.2					•	•	,	•	ı		i.					2
ITAL					2	2	7	7	3		2	1				24
IMC	A0.1	8.7	4.9	<b>♥.</b> 0	10.9	14.0	24.1	76.4	34.0	37.8	44.9	24.4	7.1	0.	0.	328.4
N 2		PFARS VS						•								
2.4 2.7	1155	40	•0	45	70	79	40	#5	•0	45	100	105	110	115	120	TOTAL
7.0 1.8 1.7 1.6 1.5 1.4																
1.7										1						1
0.7 0.6 0.9 0.4 0.2 LESS								1								ŧ
:TAL								1		1						2
ME	13.9	7.0	4.3	1.0	1.4	2.1	1.7	0.1	17.9	6.0	0.3	0.	0.	0.	٥.	66.0

						TAE	BLE	XXI	l, co	ntd.						
															. <u>-</u>	-
N	2 GUST	PEAKS VS	VEL.	HY #155.	SEG.	STFADY,	ALT.	1000. w	ST. 420	00						
2.4 2.7 7.0 1.8	1+55	40	40	65	70	75	AC	#5	90	95	100	105	110	115	170	TOTAL
1.6 1.5 1.4 1.3 1.2 0.8 0.7			1	t	1 t	1 7 1	4 2 1	2	1 2		ı					1 15 0
0.5 0.4 0.7 LESS DTAL	,, ,			1	2	11.5	7	7,3	, ,,1	6.5	1	1.3	0.	0.	0.	26 99.1
1 MC	22.3	1.1	3.2	4.9	10.2	1,.,,	11.7	***	<b>V.</b> 1	6.7	•••	,	•	••	•	****
A				BY MISS.	. SFG. 70	STEADY,	ALT.	20C0, w	GI. LE	:55	100	105	110	119	120	TOTAL
2.4 2.2 2.0 1.0 1.7 1.6	LESS	40	•0	65	••											
1.4							•	,	11	10	3	10 f	2	•	•	5
0.4						1	•	3	i	10	10	10	•	•	10	•
LESS OTAL						1	•	•	20	21	21	22	•	10	21	1.9
IME	122.6	2.5	3.1	2.)	4.5	12.6	30.1	44.8	44.9	37.1	57.5	57.1	23.3	16.7	20.5	401.
	42 GUST	PEAKS V	6 VEL.	BY #188.	sec.	STEADY.	ALT.	2000, 6	G1. 240	00						
2.4 2.2 2.0 1.6 1.7	LESS	40	•0	65	70	75	•0	•5	•0	••	100	105	110	119	150	TOTA
1.3		2		2	ı	1	2		10	ıi	13	,	•			•
0.0						3	3	7	10	5	i	10	•			5
0.7																
0.7 0.6 0.5 0.4		z		2	1.1	•	•	14	21 02.2	21	22	17	12			120

						TA	BLE	XX	II, c	ontd	١.					
	W GUST	PEAKS V	VEL.	NY MISS	. SEG.	STEADY,	ALT.	2000.	GT. 300	00						
2.4 2.2 2.0 1.8 1.7 1.6	LFSS	40	<b>6</b> 0	65	70	75	но	85	<b>♥</b> 0	15	100	105	110	115	120	TOTAL
1.3		1		ī	i.	7	,	10	1	, l	?	1	ı			7
0.8 0.7 0.6 0.5		1				3	3	11	10	7	•	2	2	i		45
0.2 LESS TOTAL		3		ι	2	10	•	21	24	26	16	•	,	1		LLA
7 <b>1</b> MF	75.5	4.9	9.5	14.2	22.4	28.2	45.1	62.9	68.1	51.1	39.5	23.2	4.8	3.5	0.1	428.6
٨	t Gust	PEAK! VS	VŁL.	RY MISS.	SFG. S	STEACY,	ALT.	20CU, W	GT. 3406	:0						
2.4	LESS	40	60	65	70	75	ac	H 5	90	95	100	105	110	115	170	TOTAL
2.2 2.0 1.0 1.7 1.6 1.5										ı						ı
1.3 1.2 0.8		1				ı	1		3	2	1 2	1				; 11
0.7 0.6 0.5 0.4 0.2 LFSS							3	t	1	1	2					16
TOTAL		1				l.	4	5	13	4	5	ı				31
1 (#(	54.3	9.6	14.2	16.2	12.1	17.3	24.7	46.7	12 5	71.6	51.3	49.4	9.0	0.	с.	459.0
N	2 GUST 1	PEAKS VS	VEL. H	N P155.	SEG. S	14404.	ALI. 2	oco, wG	1. 3000	0						
/.4 /.2 2.0 l.n l.7 l.n	LESS	40	60	65	70	75	HC	н5	90	95	100	105	110	115	120	F#FAL
1.3 1.2 0.8 0.7 0.6 0.5 0.4 0.2						1		•	,	,	2	ı				4
TUTAL						1		4	2	3	2	1				13
11#)	13.9	1.2	2.0	3.1	7.9	11.9	10.2	17.6	14.4	1.9	10.5	1.4	0.	0.	٥.	103.4

						TAE	LE	XXII	, co	ntd.						
2.4 2.7 2.0 1.8 1.7	NE GUST	I PĒAKS V	60	BY MISS	. SEG. 70	STEADY, 75	ALT.	2000, W	90	95	100	105	110	115	120	TOTAL
1.5 1.4 1.3 1.7 0.8 0.7 0.6 0.5 0.4 0.2 LESS IUFAL	14.4	0.4	U • M	1 1	1.4	i 1	, ,	<i>:</i> 0.•	1	6.4	0.2	٥.	c.	0.	0.	5 78.1
7.4 2.2 2.0 1.8	t GUST	PEAKS V	S VEL.	AV MISS.	St G. 70	STEACY. 75	ALF.	50CU. W(	57. 2006 90	95	ıcc	105	110	115		FOTAL
1.7 1.6 1.5 1.4 1.3 1.7 0.6 0.7 0.4 0.2 LESS TUTAL	٤.3	0.	0.	0.2	0.6	0.8	4.2	14.1	c.9	1.4	9.4	1 1 36-1	19.c	0.	o.	1 07.5
2.4 2.7 2.0 1.8 1.7 1.6	ł GUST LESS	PFAKS VS 40	60	NY FISS. 45	SEG. 5	1 F ADV . 75	ALT. 1	5000, WG	T. 3000	95	100	105	410	115	170	TC",AL
1.4 1.3 1.2 0.8 0.7 0.6 0.5 0.4 0.2 LESS TOTAL	n.	0.	o.	0.	0.	0.	0.	0.4	0.4	2.7	7.7	1 1 13.7	1.0	6.	0.	l 1 24.2

					===	TA	BLE	XX	II, c	ontd	<u>.                                    </u>	<del></del>				
42	SUST	PEAK! VS	VEL. 91	MISS.	SEG. S	TEACY,	ALT. S	000, WG	T. 3000	0						
	1655	40	•0	65	70	75	80	85	90	95	100	105	110	115	120	TOTAL
2.2																
2.0																
1.6																
1.7																
1.5																
1.4																
1.7						1										
0.8																
0.6																
0.5																
0.4																
. 655																
ITAL						1										
WŁ.	c.	0.	0.	0.1	0.1	0.5	1.4	0.6	C.5	0.	0.	0.	٥.	0.	٥.	3.

## TABLE XXIII Gust $n_z$ Versus $\mu$ by Mission Segment by Altitude by $\frac{C_T}{\sigma}$

					·				
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	ASCENT,	ALT.	LESS,	CT/S LESS
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									
1.3 1.2 0.6						1			1
0.7						1			1
0.5 0.4 0.2 LESS									
TOTAL						2			2
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	ASCENT.	ALT.	LESS,	C1/S 0.06
2.4	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	C.30	TUTAL
2.2 2.0 1.8 1.7 1.6									
1.3 1.2 0.8 0.7 0.6						1			ı
0.5 0.4 0.2 LESS									:
TOTAL						1			1

			T	ABLE X	XIII,	contd.			
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	ASCENT,	ALT.	1000.	CT/S LESS
2.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TUTAL
2.2 2.0 1.8 1.7 1.6									
1.5 1.4 1.3 1.2 0.8						3			3
0.7 0.6 0.5 0.4 0.2						1			1
LESS TUTAL						4			4
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	ASCENT.	ALT.	1000.	T/S 0.06
2.4 2.2 7.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20.	0.25	0.30	TOTAL
1.4				1	4				5
0.8 0.7 0.6 0.5 0.4					1				1
LESS				1	5				6

			T	ABLE X	XIII,	cont <b>d</b> .			
NZ	GUST	PEAKS VS	۴U	BY MISS.	SEG.	ASCENT,	ALT.	1000, C	T/S 0.09
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									
1.3					4				4
0.8 0.7 0.6 0.5 0.4				ı					l
LESS TOTAL				1	4				5
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	ASCENT.	ALT.	2000, CT	/S 0.06
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
1.4 1.3 1.2					5	5			10
0.8 0.7 0.6 0.5 0.4					,	1			1
LESS TOTAL					5	6			11

				TABLE X	XIII,	contd.			
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	ASCENT,	ALT.	2000, CT/S	0.09
3 4	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	C.30 TO	TAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4									
0.8 0.7 0.6 0.5 0.4 0.2 LESS						1			l
TOTAL						1			i
NZ	GUST	PEAKS VS	PU	BY MISS.	SEG.	MANUVR,	ALT.	LESS, CT/S	0.06
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30 10	TAL
1.2						2			2
0.7 0.6 0.5 0.4 0.2 LESS					1	1	1		3
TOTAL					1	3	1		5

				TABLE	XXIII,	contd.			
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	MANUVR	ALT.	1000, C	T/S 0.06
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									
1.3					1				1
0.8					•				•
0.7									
0.5									
0.4									
LESS									
TOTAL					1				1
NZ	GUST	PEAKS VS	۴u	BY MISS.	SEG.	MANUVR,	ALT.	2000, C1	/S 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C-30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									
1.3					3				3
0.8					,				,
0.7 0.6				1					ı
0.5									
0.4									
0.2 LESS									
TOTAL				1	3				4

			7	ABLE X	хпі,	contd.			
NZ	GUSI	PEAKS VS	MU	BY MISS.	SEG.	DESCRT.	ALT.	LESS, CT	/S LESS
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4									
2.2									
2.0									
1.8									
1.6									
1.5									
1.4									
1.3									
1.2						1			1
0.8									
0.7									
0.6									
0.4									
0.2									
LESS									
TCTAL						1			1
N.7	CUST	PEAKS VS	<b>W</b> A1	DV NIEE	c E C	DECENT	AL T	1000 61	/S 0 04
NZ									
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4									
2.2									
1.8									
1.7									
1.6									į
1.5									
1.4									
1.4						_	7_1		_
1.2						3	3		6
0.8					2	2	1		5
0.4					2	2	1		7
0.5									
0.4									
0.2									
0.8 0.7 0.6 0.5 0.4 0.2 LESS									
TOTAL					2	5	4		11

			7	ABLE X	XIII,	contd.			···	
N.	GUST	PEAKS VS	טא	BY MISS.	SEG.	DESCNT.	ALT.	2000, 0	T/S LE	ESS
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C • 30	TOTAL	
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3										
0.7 0.6 0.5 0.4 0.2					1		1		1	
LESS TI.TIL					ı		1		2	
N Z	GUST	PEAKS VS	۲U	BY MISS.	SEG.	DESCNT,	ALT.	LESS, C	T/S 0.	.06
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL	
1.4 1.3 1.2 0.8 0.7					1	2			3	
0.8 0.7 0.6 0.5 0.4 0.2						1			ı	
LESS TOTAL					ı	3			4	

## TABLE XXIII, contd. NZ GUST PEAKS VS MU BY MISS. SEG. DESCNT, ALT. 1000, CT/S LESS LESS 0.CO 0.05 0.10 0.15 0.20 0.25 C.30 TOTAL 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 1 1 0.8 0.7 0.6 0.5 0.4 0.2 LESS TOTAL 1 1 NZ GUST PEAKS S MU BY MISS. SEG. DESCNT, ALT. 50CO, CT/S 0.09 LESS 0.CO 0.05 0.10 0.15 0.20 0.25 C.30 TOTAL 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 1 1 0.8 0.7 0.6 0.5 0.4 0.2 LESS TOTAL 1

			Т.	ABLE XX	XIII, c	ontd.			
	-								
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	DESCNT,	ALT.	2000, 0	1/5 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
1.8									
1.7									
1.6									
1.5									
1.4									
1.2					2	5			_
0.8					2	,			7
0.7					1	1	1		3
0.6						_	ì		ī
0.5									
0.4 0.2									
LESS									
TOTAL					3	6	2		111
					-	•	•		••
N7	GUST	PEAKS VS	Mts	RV MICC	SEC	DESCRIT	A1 T	2000 61	45 0 00
,,,	003.	, ruka 13	-0	BY MISS.	350.	DESCRIP	ALI.	2000, (1	/5 0.09
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2•2 2•0									
1.8									
1.7									
1.6									
1.5									
1.4									
1.3 1.2				1					_
0.8				ı					ı
0.7									
0.6									
0.5									
0.4									
0.2 LESS									
TOTAL				1					,
-				•					1

	TABLE XXIII, contd.										
NZ	GUST	PEAKS VS	٧U	BY MISS.	SEG.	STEADY,	ALT.	LESS, (	CT/S LESS		
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL		
2.4 2.2 2.0 1.8 1.7 1.6 1.5											
1.3						1			ı		
G.8 0.7						2			2		
0.6 0.5 0.4 G.2 LESS						-			-		
TOTAL						3			3		
TIME	3.4	67.9	14.6	3.9	12.7	24.7	10.0	0.	137.3		
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	LESS, C	T/S 0.06		
2.4 2.2 2.0	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL		
1.8 1.7 1.6 1.5 1.4 1.3				3 1	3 4	4 44	4 8		14		
0.6				•					57		
0.7 0.6 0.5 0.4 0.2					3	21	4		28 1		
LESS ILTNL				4	10	70	ie		100		
riya	5.5	279.7	47.1	47.0 1	72.0	192.3	101.3	U.8	845.8		

				Т	ABLE XX	CIII, c	ontd.	-		
	ΝZ	GUST	PEAKS VS	۲U	BY MISS.	SEG.	STEADY,	ALT.	LESS, C	1/5 0.09
		LESS	0.00	0.05	0.10	0.15	C.20	0.25	C.30	TOTAL
2.4	2									
1.8										
1.6										
1.5	•									
1.3	3									
1.2	3					2		1		3
0.7							2			2
0.5										
0.2 LESS	?									
TOTAL						2	2	1		5
TIME		0.5	36.8	2.9	7.5	45.8	27.1	32.0	0.	152.6
					BY MISS.					I/S LESS
2.4		LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.2										
1.8										
1.7										
1.5							1			1
1.3 1.2						1 10	1 2 28			1 3 38
0.6						5	28	3		
0.6						,	1	,		36 1
0.4										
0.7 LESS										
TOTAL						16	60	3		79
1175		3.0	14.7	9.1	8.7	51.8	51.7	2.2	0.	138.9

			T	ABLE XX	III, c	ontd.			
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	STEACY,	ALT.	1000.	CT/S 0.0
•	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C-30	TOTAL
2.4 2.2									
2.0									
1.8									
1.7 1.6									
1.5									
1.4					•	3	2		8
1.3 1.2					3 24		14		86
0.8									
0.7 0.6				1	14 1	45	15 4		75 9
0.5					•	ĭ	1		2
0.4									
0.2 LESS									
TOTAL				1	42	101	36		180
TIME	9.8	295.6	37.6	55.5	217.8	271.9	205.9	0.	1094.2
NZ	'GUST	PEAKS VS	MU	BA WIZZ.	SEG.	STEADY,	ALT.	1000.	:T/S 0.09
	LESS	0.00	0.05						
2.4	LL 33	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.2									
2.0 1.8									
1.7									
1.6 1.5									
1.4									
1.3					1	2 7			3
1.2 0.8				1	13	7			21
0.7					6	7			13
0.6					ī	·			i
0.5 0.4									
0.2									
LESS TOTAL				1	21	16			2.0
	<b>.</b> .	70 6							38
TIME	2.0	72.5	13.6	17.4	69.9	159.4	25.1	0.	359.8

				TABLE X	XIII,	contd.			
						<del>-</del>			
NZ	GUST	PEAKS VS	۴U	BY MISS.	SEG.	STEACY,	ALT.	2000, 0	T/S LESS
2.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.2 2.0 1.8 1.7 1.6 1.5									
1.3					3	2 19	1 5		3 27
0.8					3	23	4		30
0.6 0.5 0.4 0.2 LESS						1	2		3
TOTAL.					6	45	12		63
LIWE	0.	9.0	1.5	1.4	9.0	46.1	8.5	1.4	76.9
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	2000, C	T/S 0.06
2.4	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.2 2.0 1.8 1.7 1.6 1.5									
1.3				1	23	9 97	38	2	12 163
0.8 0.7 0.6 0.5 0.4 0.2 LESS				1	13	69 7 1	45 1	4	132 8 1
TOTAL				5	38	183	84	6	316
TIFE	22.8	274.6	43.4	37.3 3	09.3	687.3	227.3	4.8	1606.9

			Т	ABLE XX	KIII, d	ontd.			
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	2000, 0	T/S 0.09
2.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6									
1.4						1 2	1		1 3
1.2				3	6	17	1		25
0.7 0.6					3	20 1			23 1
0.5 0.4 0.2 LESS									
TOTAL				1	9	41	2		53
TIME	0.	51.0	14.9	19.9	125.0	309.1	90.6	0.	610.5
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	50CO, C	r/S 0.06
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
1.3 1.2 0.8 0.7 0.6 0.5 0.4 0.2 LESS							2		2
1172	<b>C</b> •	0.3	c.	0.	13.5	87.8	78.7	0.	180.3

				TABLE X	XIII,	contd.			
NZ	GUST	PEAKS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	50CO, C	T/S 0.09
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7 0.6 0.5 0.4 0.5					1				1
TOTAL					1				1
TIME	0.	0.	0.	0.	2.1	1.0	0.	0.	3.1

				TABL					
		Gust n <sub>z</sub>	Ver	sus $\mu$ by	Miss	sion Seg	ment		
NZ	GUST	PEAKS VS	۴u	BY MISS.	SEG.	ASCENT			
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
1.4 1.3 1.2 0.8 0.7				1	13	11			25 5
0.6 0.5 0.4 0.2 LESS				•	•	•			
TITAL				2	14	14			30
N2 0	UST P	EAKS VS	PU 0	Y MISS.	SEG.	ANUVR			
2.4 2.2 2.0 1.8 1.7	-E <b>S</b> S	0.00	0.05	0.10	C.15	0.20	0.25	0.30	TOTAL
1.6 1.5 1.4 1.3 1.2					4	2			6
0.7 0.6 0.5 0.4 0.2 LESS				1	1	1	1		4
TOTAL				1	5	3	1		10

			TA	BLE XX	IV, c	ontd.			
·-							· -	-	
NZ	GUST	PEAKS VS	S PU	BY MISS	. SEG.	DESCNT			
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4 2.2									
2.0									
1.8									
1.7									
1.6									
1.5 1.4									
1.3									
1.?				1	4	12	3		20
0.3						Q	2		10
0.7 0.6					4	4	2		10 2
0.5							2		•
0.4									
0.2									
LESS				•	o	1.4	7		32
TUTAL				1	8	16	,		32
NZ	GUST LESS	PEAKS VS	MU 0.05	BY MISS.		STEADY 0.20	0.25	0.30	TUTAL
2.4									
2.2									
2.0 1.8									
1.7									
1.6									
1.5									_
1.4				4	10	2			2
1.3 1.2				6	10 86	24 261	8 67	2	46 422
0.8					00		0,	•	766
0.7				2	47	217	73	4	343
0.6					2	15	7		24
0.5						2	1		• 3
0.4									
LESS									
TUTAL				12	145	521	156	6	840
TIME	44.9	1102.0	184.7	198.8 1	029.0	1858.4	781.6	7.1	5206.4

			C		Vone			EX		<i>(</i> :	·					
			Gust	n <sub>z</sub>	vers	us A	irsp ——	eed	БУ М	1155	ion s	egm	lent			
N	iz GUST M	PEAKS VS	YFL. H	Y MISS.	SEG. A	SCE! I										
2.4 2.2	LESS	40	60	65	10	75	HC	85	30	95	100	105	110	115	170	TOTAL
2.0 1.8 1.7 1.6 1.5																
1.3			1	,	4	5	4	2	•	,	ı					25
0.7 0.6 0.5 0.4		ı				•		1	1	1						•
FITAL		ı	ī	2	4	•	4	1	•	4	1					3n
•	NZ GUST (	PEAKS VS	VEL. B	¥ #155.	StG. P	ANUVR										
2.4 2.6 2.6 1.8 1.7	1685	40	<b>▲</b> 0	•>	10	15	H0	u5	90	45	100	105	110	115	120	TOTAL
1.4			1	2		ı		ı	1							
0.7 0.6 0.5 0.4		ì				1		_1				ı				•
LESS		1	i.	•		Z		2	ı			ı				10
,	NZ FILST	hfwk2 A7	VEL 11	Y PISS.	SFG. D	ESCNT										
2.5 2.7 2.0 1.8 1.7 1.6	1155	40	60	65	70	15	нС	н	90	95	100	105	110	115	150	TOTAL
1.3		ī				2	1	5	7	2	2	ı	2			20
0.7 0.0 0.4 0.4						7	2	ı	,		1	ı	?		ı	10
LESS		1				4	5	6	4	2	1	2	4		ı	32

	<u>.</u>			<u>.                                    </u>		TAI	3LE	XXV	, co	ontd.						
N	17 GUST	PEAK! V	S VEL.	ey MISS	s. sec.	STEACY										
2.4 2.2 7.0 1.d 1.7	LESS	40	60	65	70	75	<b>8</b> C	<b>a</b> 5	90	95	ıcc	105	116	115	150	TOTAL
1.6 1.5 1.4 1.3 1.2 C.h		3 5	1 2	10	3	19	31		67	1 6 71	1 1C 74	36	19	5	•	42
0.7 0.6 0.5 0.4 0.2		,		t	7	15	20	1	4	50 7 1	57 3 1	38 4 1	19	•	10	34
LESS LIAL IMP	1375.1	10	1/2.0	13 153.4	18 2C6.#	58 294.7	61 372.5	95 550.8	141	136 425.3	146	433.7	36 217-1	13 45.6	21 22.4	944 5204.4

				ΓABLE st n <sub>z</sub> Ve		A			
	NZ GI	UST PEAI	KS VS.	MU COI	POSITE				
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TUTAL
2.4 2.2 2.0									
2.0									
1.8									
1.6									
1.5						2			2
1.3				<b>4</b> 8	10	24	8		46
1.2				8	107	286	70	2	473
0.8				4	53	225	76	4	362
0.6					2	15	9 1		26
0.5						2	1		3
0.4									
LESS									
OTAL				16	172	554	164	6	912

				Gu			E XX	KVII s Ai:	rspe	ed					
: E55 2.4 2.2	PEARS VS	VELCC1	TY CUM 65	POSITE 70	75	ec	45	90	95	100	105	110	115	120	TOTAL
2.0 1.8 1.7 1.6 1.5 1.4 1.3	3	1	2 14	3 12	47	1 3e.	3 55	5 73	1 6 76	1 10 77	37	21	5	٠	2 46 473
0.1 0.6 0.5 0.4 0.2	•		ı	7	19	30 1	47	68	51 7 1	58 3 1	39 5 1	21	•	10	362 26 3
F15 T1L	13	,	17	21	70	70	106	150	142	150	90	42	13	22	912

## TABLE XXVIII Maneuver n<sub>z</sub> Versus Airspeed by Mission Segment by Altitude by Gross Weight

120 FOTAL
1 1
1 1
1 1
1
1
1
1
1
1
2
5
150 LOLAT
2
•
•
10
120 TOTAL
ı
1
•

					<b>T</b> .	ABL	E X	KVIII	., co	ntd.					
	-														
			VS VEL. F	AV PISS.	. SEG. /	ASCENT.	AL1. I	LFSS. WG	.T. 3800	0					
7.4 2.7 7.0 1.8 1.7 1.6	7 B 7 6	40	60	65	70	15	AC	85	90	95	100	105	110	115	150 LULYT
1.4 1.3 1.2 0.8 0.7 0.6 0.5	1 2 1 1 1 1														1
0.7 LFSS TOTAL	5														1
N			ytt. hy												
2.4 2.7 7.0 1.8 1.6 1.6	(155	40	<b>6</b> Û	65	70	15	M C	85	40	45	lut	105	110	115	120 IUTAL
1.3	1				2										1 3
0.8 0.7 0.6 0.5 0.4	2	ı						t							3
LESS FOFAL	•	1			2			i							A
N	Z MANEUV	EKS VS	S VEL. HY	r MISS.	SFG. A!	SCENT, J	ALT. 10	)00. <b>#</b> GT	. LESS						
2.4 2.2 2.0 1.8 4.7	L+SS	40	60	65	70	25	H C	85	90	95	100	105	110	115	150 LUANT
1.4	t														1
1.3 1.7 0.8 0.7 0.6 0.5	5	i				1			1	ı		1			•
G.2 LESS TOTAL	,	ı				1			2	1		2			14

						TAB:	LE X	XVII	I, c	ontd	•					
										_						
N/								10CO, WG1								
2.4 2.2 2.0 1.8 1.7 1.6		40	60	45	10	15	60	•5	90	95	100	105	110	115	120	TOTAL
1.4 1.3 1.2 0.6 0.7	1 2	1		1			1	1		1						2 5
0.5 0.4 0.2 LESS 10TAL	•	2		ı		4	ī	1		1	ī					11
!																
N/							•	1000. WG1								
2.4 2.2 2.0 1.6 1.7 1.6	LESS	40	<b>60</b>	65	70	25	<b>6</b> C	<b>65</b>	₹0	15	100	105	110	11'	120	TOTAL
1.4 1.3 1.2 0.8 0.7 0.6	2	1		ı					1							• !
0.4 0.7 LESS TUTAL	2	1		1					1							•
	Z MANEUV	IENS VS	VEL. H	Y PISS.	SEG.	ASCENT,	ALT.	1000, hu	I. 34000	0						
7.4 2.7 2.0 1.4 1.7 1.6	1685	40	60	65	70	75	нс	65	90	45	100	105	110	115	120	FOTAL
1.4 1.3 1.7 0.8 0.7 0.6 0.5							ı									1
0.2 LESS TOTAL							1									1

		· <u>·</u>			T	ABI	LE X	XVII	I, co	ontd	•	· <u> </u>				
Ni	Z MANEUV	ERS VS	VEL. 8	v HISS.	SEG. A	SCENT,	ALT. 1	OCO, WG	T. 42001	)						
2.4	LESS	40	60	45	70	75	80	85	90	95	LCC	105	110	115	150	TOTAL
2.2 2.0 1.8 1.7 1.6 1.5																
1.2 0.8 0.7 0.6 0.5	ı	2	ı	1		ı				1						2
0.2 LESS TOTAL	1	2	1	1		11				1						,
N2	MANEUVI	ERS VS	VEL. 81	/ #ISS.	SEG. AS	SCENT,	ALT. 20	300, EG1	7. LESS	95	100	105				
2.4 2.2 2.0 1.8 1.7 1.6		•		•,	,,	.,		•,	70	**	100	105	110	115	120	TOTAL
1.4	7															1
0.8 0.7 0.6 0.5	•	2	2	ı	2	2	1	4	3							19
O.2 LESS OTAL	•	•	2	ı	2	2	4	•	3							33
MZ	MANEUVE				SEG. AS	SCENT. 1	NLT. 20	:CO, WGT	. 260C0	95	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6	LESS	40	•0	65	,,	• •		•,		.,		,				
1.3	1		1										1			1
0.8 0.7 0.6 0.5	1		1		1	ı	1	3					1			1
O.2 LESS OTAL	2		2		1	1	ı	3					2			12

					1	ABI	LE X	XVI	II, c	ontd	١.					
					-										·	
N i	Z PANEUVE	NS VS	VEL. H	MISS.	SFG. A	SCENT, A	LT. 20	00, WG1								
2.4 2.2 2.0 1.6 1.7	LESS	40	60	45	70	75	80	65	90	95	160	105	110	115	120	TOTAL
1.5	1							1	1							1
0.8 0.7 0.6 0.5		ı	ı			2	ı	2		2						,
O.Z LESS IIITAL	1	2	ι			2	1	3		2						13
N	/ PANEUV	EHS 47	VEL. H	Y PISS.	SEG. A	SCENT,	ALT. 2	OCU, WG	. 3mocc	)						
	1 E S S	40	60	65	70	75	AC	85	90	95	100	105	110	115	120	TOTAL
2.6 2.2 2.0 1.6 1.7 1.6 1.5 1.4 1.3 0.H 0.7 0.6 0.5 0.5 0.5		i i														1
N	/ MANEUVE															****
2.4 7.7 2.0 1.8 1.7 1.6 1.5	1155	40	40	65	70	15	AO	85	90	95	100	105	110	115	(20	TOTAL
1.3 1.2 0.8 0.7 0.6 0.5 0.4			1													1
LESS			1													1

```
TABLE XXVIII, contd.
                                             115
                                                  120 TOTAL
                            100
                                  105
                                       110
                                            115
                                                 120 TOTAL
                                                        2
                                                        ı
                                                 120 TOTAL
                                                       1
```

					Т	ABL	E X	XVIII	, co	ntd.						
~	/ <b>#</b> 2 111 13 V	EKS VY	VIL. 4	Y MISS.	SFG. 9	ANIIVA.	ALT. I	F55. NG	. 3000	0						
2.4	1155	40	60	65	70	75	90	44	90	95	100	165	110	115	170	TOTAL
2.7 2.0 1.8 1.7 1.6																
1.3		ı				ı										ļ
0.8 0.7 0.6 0.5		,				2		7			1					7
O.Z LESS TOTAL		i				1		2			1					•
N Z	PANEUVE LLSS	40	AEF. W.	#155.	SEG. #	ANUVR.	ALI. L	C\$\$, hG1 85	42000	45	100	105	110	115	120	TOTAL
2.4 2.7 2.0 1.8 1.6 1.5 1.4 1.3 1.2 0.8									1							
0.6 0.5 0.4 0.2 LESS																
TUTAL									ı							1
N2	MANEUVE	RS VS	VEL. OY	<b>#155.</b>	SEG. M	ANUVR, A	LT. 1	960, WGT	. 26000							
2.4 2.2 2.0 1.8	LESS	40	•0	65	70	75	•0	<b>85</b>	•0	45	100	105	110	115	120	TOTAL
1.6																1
1.5	1 2		,		1	1	1		L							4
1.5		ı	2		1	ļ	3		•	1			ı			7

					T	ABL	E X	XVIII	, coi	ntd.						
N E	L PANEUV	FHS VS	VEL. #1	r MISS.	SEG. P	ANUVR.	ALT. I	1000, WG1	30000	95	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8											•					
1.7 1.6 1.5																
1.3 1.2 0.8 0.7	ı									ı						1
0.6 0.5 0.4 0.2																
TUTAL	ı									1						2
N.	2 PANEIJY	ENS VS	. VEL. M	Y MISS.	SFG. #	IANUVR.	ALT.	LONO, WG	. 3HOOO							
2.4	1+55	40	60	65	10	75	нС	81	90	95	100	105	110	115	120	TOTAL
7.0 L.F L.A L.A																
1.4	;															1
0.7																
0.2 LESS IDIAL	,															,
N Z	MANEUVI	FRS VS	VEL. HI	r MISS.	StG. #	ANUVR,	ALT. Z	OCO, WGI	. LESS							
2.4	LF \$5	40	•0	65	70	75	a C	<b>u</b> 5	90	45	100	105	110	115	150	TOTAL
2.2 2.0 1.8 1.7 1.6																
1.4 1.3 1.2 0.8 0.7	1			1	3	ı	1.	4		11			ı			12
0.5 0.4 0.2 LESS IUIAL	1			1	3	1	ι	4		i			ī			13

						TAB	LE	XXVII	I, c	ontd	l		-			
	PANLUVI LESS	EHS VS	VEL. 87	MISS.	\$EG.	MANUVK.	ALT. BC	2000, WST	. 26001	95	100	105	110	115	150	TOTAL
2.4 2.2 2.0 1.6 1.7																
1.5 1.4 1.3 1.2	1		i i	2	5	1	1 1	ţ	2	1	1	2				2 3 7 24
0.7 0.6 0.5 0.4 0.2	ı			1	5	ı	2	,	i				•	2		10
LESS TOTAL	•	•	2	3	7	•	•	7	,	1	2	2	ì	2		50
NZ	MANFUVE	HS VS	VEL. HY	#155.	\$#G.	MANUVR, 75	ALT.	2000. hGE.	. 30000 <del>9</del> 0	• • • • • • • • • • • • • • • • • • • •	100	105	110	115	120	TOTAL
2.4 7.2 2.0 1.6 1.7 1.6								**						•••		
1.4 1.3 1.2 0.8 0.7	2 2	i		ı		1					ı					2 4 2 3
0.5 0.4 0.2 LESS TOTAL	•	ı		ı		2					1					11
MZ	PANEUVE	RS VS	VEL. NY	MISS.	SFG.	MANUVR,	ALT.	5000, WGT.	30000							
2.4 2.7 2.0 1.8 1.7 1.6 1.5	L+ \$5	40	40	•5	70	75	RC	<b>6</b> 5	<b>•</b> Ω	95	100	105	110	115	120	TOTAL
1.7 0.8 0.7 0.6 0.5	1	,														;
0.7 LESS TOTAL		2														3

					T	ABL	E X	XVII	l, co	ntd.	•					
N.	Z PANEUV	EHS VS	VEL. H	Y MISS.	SEG. ()	ESCNT.	ALI. L	ESS, WG	r. LESS	<b>.</b>						
	11:55	40	60	65	70	75	ø c	H5	40	95	100	105	110	115	120	TOTAL
2.4												•••		•		
2.0 L.H																
1.6																
1.5																
1.3	1	ı			ı	2										
0.8 0.7	1	1			•	•										- 53
0.6	•											ı				
0.4																
0.7 LESS	_															
IUIAL	2	3			1	?						1				•
									34000							
147					SEG. DI	25 15	HC HC	85 NG	70	45	100	105	110	115	120	FOTAL
1.4	1+55	40	60	65	70		n C	9.1	70	71	100	103	110	113	170	1111 41.
2.0																
1.7																
1.5																
1.4																
0.6					ì		1		1							
0.7						1		1								7
0.4																
0.7																
II-TAL					1	1	ı	,	1							e.
',					. Strain											
7.4	1) 55	40	60	65	70	75	M(.	45	40	45	100	105	110	115	150	TOTAL
2.0																
1.0																
1.5																
1.4																
0.8				i		ı		1								3
0.7		1				ı	ı		1							4
0.4																
0.2																
HITAL		Ł		1		7	1	1	t							,

					Ī	ΓAΒΙ	LE >	XVI	II, c	onto	1.					
-																
٨	/ PANEUV	EKS VS	VEL. H	Y #155.	St G. C	FSCNT,	ALT. I	UNO. »G	T. LES	S						
2.4 2.2 7.0 1.8 1.7 1.6	1+55	40	60	65	70	75	HO	85	90	95	100	105	110	115	170	TOTAL
1.4 1.3 1.2 0.8	4		ı	1	ı	2	,		1 =		ı					1.2
0.7 0.6 0.5 0.4 0.2	i	1		ı	t		6		í		1		1			14
LESS	15	ŧ	ı	,	2	5			•		4		1			şn
					•											
, No	FANEUVE	45 VS	VEL. H1	#155.	SEG. N	ESCNT, A	BO BO	000. NG	90	95	100	105	110	115	120	FOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5														•••		
1.3 1.2 0.8		ı		1	ı	2	4	2		1						12
0.1 0.6 0.5 0.4	1				?	,		1			1		ı			1
LESS TUTAL	ı	1		1	4	•	•	3		1	t		ı			21
	LESS	40 40	PO AET. WA	#155.	SEG. PE	SCHT, A	LT. LO PC	CO, WG1	. 10000 70	95	100	105	110	115	120	TO LAL
2.2 2.0 1.8 1.7 1.6	. ****	40	80	",	70	••	70	·,	,,,	,	100	10,	110	117	170	11/1-11
1.4	i i	i I	ı			2			1	1						l n
0.8 0.7 0.6 0.5	•		•			2				1	1					\$
0.2 LESS																

					7	(AB	LE X	XVI	II, co	ontd	•					
٠,	7 MANITUS	# C J C	W61 . MV	w) C C	ste n	\$17 <b>6.7</b>										
2.4	1055	40	60	65	10	15	iic	H5	<b>3</b> 0	95	Loc	105	110	115	170	(ATC)
2.7 2.0 1.#																
1.7 1.6 1.5																
1.3 1.2 0.6 0.7	l ,		1	,												4
0.5 0.5	,					1										1
9.2 1155 10131	•		ı	,		1										,
	LESS 1 MANEUV	40 40	OO VEL. BY	65 HISS.	\$FG. 1	IESCNT.	ALT. L	ess. wg	9C	95	100	105	110	115	170	TOTAL
2.4 2.2 2.0 1.8																
1.7																
1.4 1.3 1.2 0.8		ı	1													2
0.7																
0.4 0.7 LFSS TCTAL		1	ı													,
٨	7 PAREUVE	.RS VS	VEL. (1)	#155.	51 G. C	ESCNT.	ALT. L	ESS, WG	1. 3HUOO 7U							
7.4				•,	,,	,,	40		70	45	100	105	110	115	120	TUTAL
7.7 7.0 1.8 1.7																
1.5 1.4 1.3 1.2	1				ı		ı									ļ
0.8 0.7						11										,
0.5 0.4 0.7 LESS																
IATE					1	1	1									4

					T.	ABL	ΕX	(VIII	, co	ntd.			_			
														•		
N	MANEUVE	RS VS	VEL. BY	PISS.	SEG. D	ESCNT,	ALT. LE	SS, WGT	. 42000							
2.4 2.2 2.0 1.8 1.7 1.6	LESS	40	60	65	70	75	80	45	•0	95	100	105	110	115	120	TOTAL
1.4 1.3 1.2 0.8 0.7	1	1														1
0.5 0.4 0.2 LESS TOTAL	2	ı														3
N	Z MANEUV LES"	ERS VS	• VEL. B	Y MISS.	SEG. (	DESCNT,	ALT. 1	0C0, WG	7. 380C	0 95	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.6 1.7 1.6 1.5 1.4 1.3																
0.8 0.7 0.6 0.5 0.4			1	1		1										1
LESS TOTAL			1	1		2										•
N	Z MANEUV	ERS VS	VEL. B	r MISS.	SEG. D	ESCNT,	ALT. 10	000, WG1	. 42000	•						
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4	LESS	40	60	45	70	75	●C	<b>\$</b> 5	90	45	100	105	110	115	120	TOTAL
0.8 0.7 0.6 0.5		3					1	3								1 5
0.4 0.2 LESS TOTAL		3					•	3								10

					Γ	ABI	LE X	XVI	II, c	onto	l					
		_							·							
N.	/ MANELIN	FILS VS	VFL. H	MISS.	sie. t	ESCNT.	A1 T. 2	oco, wa	I. LES	5						
2.4 2.2 2.0 1.8 1.7	1855	40	60	65	70	75	ИС	н	40	95	100	105	110	115	120	FUTAC
1.5 1.4 1.3 1.2		\$ 1		1	,	3	7	2	,	3			1	1	1	t 19
0.7 0.6 0.5 0.4	1			,	ı	2	4	1	1	1			•		,	
L( \$ \$ 1 ( 1 4)	ı	,		3	,	5	6	6	•	,			,	1	2	41
N,	7 - MA NE LI VE	FRS VS	VEL. NY	PISS.	SEG. P	ESCRT, /	N.T. 20	060 <sub>6</sub> MG	. 26000	)						
2.4 2.2 2.0 1.6 1.7	1155	40	40	65	70	75	WC	+5	90	95	100	105	110	115	120	TOTAL
1.5 1.4 1.1 1.2	1	ı					ı		,							111
0.7 0.6 0.5 0.4 0.7	ŕ			ı	•	ı	,	,	1	1						ij
SUTAL	6	ı.		ı	4	ı	1	,	٨							25
N/	PAGEUVI					SCN1. A							1			
2.4 2.2 2.0 1.8 1.1	n 82	40	60	65	70	,,	AC	н5	40	95	100	105	110	115	120	TOFAL
1.5 1.4 1.3 1.7					ı	1		1	1							147
0.7 0.6 0.5 0.4					1	3		i				1				6 1 1
LESS					•	•		,	1			ı				12

					Т	ABI	LE X	XVII	I, c	ontd	•					
			-												-	
N	I MANEUV	RS VS	VEL. H	Y MISS.	SEG. D	ESCNT.	ALT. 2	000. WG	1. 3400	0						
7.4	LESS	40	60	65	70	75	ac.	85	90	95	\$ OC	105	110	115	120	FOTAL
2.7 7.0 1.8 1.7 1.6																
1.4 1.3 1.2			ı		ı		-									2
0.0					,	1	2									,
0.6 0.5 0.4 0.2					•	•	i	ı								;
I CSS IOTAL			ı		•	,	•	ı								12
N	7 PANEUV	HS VS	VEL. N	Y PISS.	SIG. DE	ESCRT.	AL 1 . 2	non. wG	. 38000	•						
2.4 2.2 7.0 1.H 1.7 1.6	1+55	40	60	65	70	75	HO	85	90	95	100	105	110	115	120	TOTAL
1.4 1.7 0.8 0.7 0.6 0.5		ì	1													,
UFSS SUTAL			ī													,
P1 I	7 PANELIVE	HS V5	VIL. DY	MISS.	SEG. DE	SCNT. A	LI. 20	00. dúl	. 42000							
	1155	40	60	65	70	75	AC	45	90	45	100	105	110	115	120	THTAL
2.4 2.7 7.0 1.8 1.7 1.6 1.5																
0.4 0.4 0.7 0.6 0.5						7	.1									;
0.7 1155 141 11						2	ı									,

						TAB	LE 3	(XV	III, c	onto	i.					
			·													
N.	Z MANEU	VERS V	VEL.	NY + 155.	SFG.	STEADY,	ALT.	LESS, W	GT. 260	00						
2.4 2.2 2.6 1.8 1.7 1.6 1.5	LFSS	40	•0	65	70	75	<b>●</b> C	u5	90	95	100	105	110	115	150	TOTAL
1.3	5		ι	•		1 2			ļ	-	?	-				4
0.h 0.7 0.6 0.5	6	•	•	•	2	2	2	3	5	2	1	2				27 19 1
LESS	11		,	4	2	,	4	3	•	61		2				
I I MI	/71.0	/5.0	16.2	20.5	24.6	20.8	15.8	24.0	26.5	34.6	29.7	11.7	4.6	2.9	1.5	479.9
N. 2.4	PANEU!	VERS V:	5 <b>V</b> EL.	HV PISS.	. SEG. 10	511ACY. 75	ALT. I	LESS, w	61. 1001 90	00	toc	105	110	115	120	TOTAL
2.4 2.0 1.8 1.7 1.6 1.5 1.4 1.3	i				Ł			ı	4	ı				1		10
0.7 . 0.6 0.5 0.4 0.2 LESS	1				l	t			,	•	1	,				15
IL-TAL	2				3	1		1	10	5	1	2		1		26
1   46	67.5	1.5	4.8	H. 1	12.7	14.7	16.6	16.0	13.0	7.9	6.1	71.0	74.8	0.5	0.	223.8
N	/ MANCUS	VEHS VS	60 VEL. 1	(Y PISS.	SFG. 5	STEADY,	ALI. L	.FSS, 60	90	95	100	105	110	115	120	TOTAL
2.4 /.2 2.0 1.8 1.7 1.6 1.5 1.4 1.7 0.8 0.7 0.6 0.5 0.4				• •	ı	. ,										ı
LESS	17.4	١.١	2.7	6.4	l 6.2	12.4	7.4	9,3	e.n	5.4	6.7	31.5	21.0	0.8	0.	l 160.7

				<del></del>		TAI	LE	XXV	III,	cont	d.	<u>-</u>				
٨		JVERS V	S VEL.	NY MISS		STEADY	, ALT.	LFSS, I								
2.4 2.2 2.0 1.8 1.7 1.6	1155	40	60	65	70	15	AC.	н5	<b>4</b> 0	95	100	105	110	115	120	101
1.3 1.2 0.8 0.7 0.6 0.5 0.4 0.2 1855											1					
TIITAL TIME	4.1	0.2	0.7	0.7	1.5	h.6	5.1	1.2	1.7	1.4	C.6	0.3	2.4	2.5	0.3	28
N	Z MANEU	IVENS V	S VEL.	64 PISS	. SEG.	STEACY	ALT.	LESS, 1	IGT. 420	,00						
2.4 2.2 2.0 1.6 1.7 1.6 1.5	LESS	40	60	65	70	15	RC.	85	•0	95	100	105	110	115	150	101
0.6 0.7 0.6 0.5 0.4 0.2 LESS			i		1	1		1								•
IMI	31.0	4.4	4.3	5.8	4,5	3.1	4.C	2.1	3.7	2.5	0.1	0.3	0.2	0.	0.	66.
N	2 PANEU	VERS VS	VEL. (	NY #155.	SEG.	STEADY,	ALT.	1000, 6	GT. LE	ss						
2.4 2.2 2.0 1.8 1.7 1.6	LESS	40	60	65	70	75	80	85	90	95	100	105	110	115	150	TOTA
1.4 1.3 1.2 0.8 0.7 0.6 0.5	3	ı		,	1	3	1	Z	,	1	2	,	.1	ι		2
0.2																

						TAB	LE 2	XXV.	III,	cont	d.			<u></u>		
	Z MANEUS	48.8 44	urs	u wice		£ 85 AFW		1000 4	C1 140							
•	LESS				70	75	AC.	85	90	94	100	105	110	115	120	TOTA
2.4 2.2 2.0 1.8 1.7 1.6	(633	40	60	65	70	73	r.c	4,	***	,,	100	•••	•••		•••	
1.3	1				3	5	•	? ! !	i n	1 4	,	3	1	11		4
0.8 0.7 0.6 0.5	?	ı		ı	•	1	,	î	١	•	1	1	,	7		2
0.2 LFSS Intal	4	i		ī	•	,	6	17	17	9	•	•	,	3		A
T   Mb	17/.3	19.0	17.7	22.0	24.9	15.7	49.1	51.2	46.1	14.9	25.8	24.1	11.7	1.6	0.1	514.
7.4 7.7 2.0 1.H 1.7	Z MANFUI	VEHS VS 40	6 VFL - 1	AY PISS	. SEG. 70	51F ADY. 75	ALT.	1000. W	90	CN 45	LOR	tcs	110	115	120	TOTAL
1.3	ì	2							1			ı	ı	ı		,
0.1 0.6 0.5 0.4	,	3		ı			ı					1 t				a i
OTAL	3	5		1			•		,			3	1	ı		U
TMI	40.8	13.4	M.7	4.5	4,9	н.7	4.7	19.0	1.3	н. и	34.2	60-1	55.1	9.5	0.	290.H
N Z	PANEUV	ERS VS	۷ŁL. ن	Y PISS.	36G. S	IEADY,										
2.4 2.7 2.0 1.8 1.7 1.6 1.5		40	30	3,	70	,,	нC	85	90	95	100	105	110	115	170	TOTAL
1.3	2					ı	,									6
0.7 0.6 0.5 0.4	•						ı		1							6
155 Ifal	,					ι	4		ı							13
ME	8U.1	8.7	4.9	9.0	10.5	14.0	24.1	26.4	34.0	19.8	44.9	24.4	7.7	0.	0.	128.4

						TAI	BLE	XXV	III,	cont	d.	<u> </u>		<del></del>		
N	2 PANEU	VEHS VI	s vel. I	HV MISS	. SFG.	STEACY	, AL1.	1000. 1	1GT. 38	oco						
2.4	LESS	40	60	65	70	75	80	#5	90	95	100	105	110	115	130	TOTA
7.2 2.0 1.6 1.7 1.6 1.5									ı							
1.2 0.8 0.7 0.6 0.5 0.4									i	ı						
TOTAL									2	ı						
FIME	13.4	1.0	4.3	1.0	1.8	7.1	3.7	8.1	17.9	6.0	0.3	٥.	0.	о.	0.	86
M	/ PANEUS	IFHS VS	Vet. n	Y PISS.	SFG.	STEADY	ALI.	1000, 6	G1. 470	100						
2.4	1155	40	60	65	Į0	75	AC	45	90	95	100	105	110	115	120	TOTA
7.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7		ı		1		2	4 ,	1	,	•						•
0.4																
LESS		ı		ı		3	6	,	,	ı						1
141	27.3	1.1	1.2	4.9	10.2	11.5	11.9	7.3	9.1	6.5	7.1	1.3	0.	0.	0.	49.
N2	PANEUV	FRS VS	VFL. A	Y MISS.	sie.	STEAGY,	ALT.	ZOCO, WC	a. 09	55						
2.4	1155	40	60	65	10	15	AC	85	90	45	100	105	110	115	120	IOTA
2.2 2.0 1.8 1.7 1.6																
1.4 1.3 1.7	ı					1	-	4		,	2	1	ı	?	,	4
0.8	1					,	,	ì	4	5	3	•	ı	4	3	30
0.6 0.5 0.4 0.2							1				1	1	ı		ı	
HEAL	,						,	5	H	10	11	10	1	11		
[2]	122.6	2.5	1.1	7.1	. 4.5	12.0	30.1	44.8	44.7	19.9	57.5	57.1	23.1	16.7	20.5	401.4

						TA	BLE	XXV	III,	con	td.					
	IZ MANEL	JVERS V	'S VEL.	BY MISS	. 556.	STEARN	41.7	2000	uer 34							
	LESS	40	60	45												
2.4 2.2 2.0 1.8 1.7 1.6		40	••	•,	70	75	•c	85	•0	95	100	105	110	115	120	0 TOT
1.3	1	1	1	•	3	•	1 7		3		10	i 7	2	1		
0.8 0.7 0.6 0.5	7	1		1	2	3	3	4	5	11		3	2	-		
0.4 0.2 LESS OTAL	12	2	1	,	5	7	11	12	8	21	15	12		ı		1
IME	184.9	12.6	13.4	16.5	29.8	55.0	58.7	85.5	62.2		50.5	56.5	29.0	4.9	0.1	
Ni	Z MANEU	VERS VS	s vel.	ev MISS.	sec.	STEADY.	ALT.	20C0. W	<b>61.</b> 300	000						
	LESS	40	60	65	70	75	00	85	90	95	100	105	110	115	120	TOTA
2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3	1	1				2	1 2	. 6	4	4	3					2
0.7 0.6 0.5 0.4 0.2 ESS	1	1	ı	1	1	3	1	3	1 1	1	3	1	2			2
TAL IME	25.5	1.1	1.5	14.2	22.9	20.2	45.1	10 82.9	68.1	51.1	7 39.5	23.2	4.8	3.5	0.1	428.
NZ	MANEUV	ERS VS	VEL. 9	v #155.	SEG. S	TEADY.	ALT. 2	000. NG	T. 3400	:0						
	LESS	40	60	65	70	75	<b>ac</b>	85	90	95	100	105	110	115	120	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4						2	,	5	1	4	1					15
0.7 0.6 0.5 0.4 0.2 ESS	1			1	2	1	2	1	1	•	2					14
TAL	1			1	2	3	4	•	2	•	3					30
¥	54.3	7.6	16.2	16.2	12.1	17.3	24.7	46.7	72.5	71.8	57.3	49.4	9.0	0.	٥.	459.0

					7	(AB)	LE X	XVI.	II, c	ontd						
								- <u>-</u>								
	NZ MANEU	VERS V	S VEL. 1	NY PISS	. SEG.	STEACY,	ALT.	20C0, M	GT. 380	00						
2.4 2.2 2.0 1.8 1.7 1.6		40	60	65	70	75	80	45	90	•5	100	105	110	115	120	TOTAL
1.3 1.2 0.8 0.7 0.6 0.5				ı		2					ı					1
0.2 LESS TOTAL	1			1		2					ı					
TIME	13.9	1.2	2.0	3.1	7.9	11.9	10.2	17.6	14.4	8.9	10.5	1.9	0.	0.	0.	103.4
N	Z MANEUV	ERS VS	VEL. BY	v riss.	SEG. D	ESCNT,	ALT.	5000, WG	T. 3400	0						
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8	LESS	40	<b>60</b>	65	70	75	•0	85	•0	95	100	105	110	115	120	TOTAL
0.5 0.4 0.7 LESS TUTAL						1										1
NZ	MANEUVE	RS VS	VEL. BY	MISS.	SEG. DE	SCNT, A	LT. 50	ICO. WGT	. 30000							
2.4	LESS	40	6 C	65	70	75	#C	85	90	45	100	105	110	115	120	TOTAL
2.0 1.8 1.7 1.6 1.5 1.4 1.3																
0.8 0.7 0.6 0.5 0.4						1 1										1
LESS						2										2

					Т	ABI	ĿΧ	XVII	I, c	ontd	•					
N	Z PANEUV	EH <b>S</b> VS	VEL. 8	r PISS.	SEG. S	TEADY,	ALT. L	ESS, WG	T. LES	s						
	LESS	40	60	65	70	75	80	85	90	95	100	105	110	115	120	TOTAL
2.4																
2.7																
1.8																
1.7																
1.6																
1.5																
1.4																
1.2	2	1			•		1			1		1		1		
0.8	Ĭ	-	•				•			•	•	•		•		
0.7	ì							2	1	1	2	ı				
0.6																
0.5																
0.2																
LESS																
DIAL	3	1	l		1		ı	2	ı	2	3	2		1		1
1 ME	95.0	5.3	5.0	9.1	0. L	6.0	3.6	9.0	4.9	9.6	6.6	1.1	1.9	0.2	0.	176.

## TABLE XXIX Maneuver $n_z$ Versus $\mu$ by Mission Segment by Altitude by $\frac{C_T}{\sigma}$

	·									
NZ	MANEU	VERS VS	MU	BY MISS.	SEG.	ASCENT,	ALT.	LESS,	CT/S	LESS
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	G_30	TOT	<b>AL</b>
2.4										
2.2										
2.0										
1.8										
1.7										
1.6										
1.5										
1.4		•								
1.2		1 1								1
0.8		•								1
0.7						2				2
0.6						•				2
0.5										
0.4										
0.2										
LESS										
LL 33										
TOTAL		2				2				4
TOTAL	MANEIII		<b>2</b> 11	AZ MISS.	SFG.		ALT.	LESS.	CT/S	0.06
OTAL		/ERS VS		BY MISS.		ASCENT,				
'OTAL NZ	MANEU\ LESS	/ERS VS		BY MISS. 0.10				LESS, 0.30		
OTAL NZ 2.4		/ERS VS				ASCENT,				
NZ 2.4 2.2		/ERS VS				ASCENT,				
NZ 2.4 2.2 2.0		/ERS VS				ASCENT,				
NZ 2.4 2.2		/ERS VS				ASCENT,				
OTAL NZ 2.4 2.2 2.0 1.8		/ERS VS				ASCENT,	0.25			
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5	LESS	/ERS VS				ASCENT,				1
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5		/ERS VS				ASCENT,	0.25			1 1
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5	LESS	VERS VS O.CO				ASCENT,	0.25			1 1
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4	LESS	/ERS VS				ASCENT,	0.25			1
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3	LESS	VERS VS 0.CO	0.05	0.10	0.15	ASCENT, 0.20	0.25			1 1 2 5
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7	LESS	VERS VS O.CO				ASCENT,	0.25			1 1
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 0.8 0.7 0.6	LESS	VERS VS 0.CO	0.05	0.10	0.15	ASCENT, 0.20	0.25			1 1 2 5
OTAL NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 0.8 0.7 0.6 0.5	LESS	VERS VS 0.CO	0.05	0.10	0.15	ASCENT, 0.20	0.25			1 1 2 5
NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7 0.6 0.5 0.4	LESS	VERS VS 0.CO	0.05	0.10	0.15	ASCENT, 0.20	0.25			1 1 2 5
NZ 2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 0.8 0.7 0.6 0.5	LESS	VERS VS 0.CO	0.05	0.10	0.15	ASCENT, 0.20	0.25			1 1 2 5

			7	ABLE X	XIX,	contd.			
NZ	MANEU	VERS	VS MU	BY MISS.	SEG.	ASCENT,	ALT.	LESS, (	T/S 0.09
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.0									
1.8									
1.7									
1.5									
1.4									
1.3		1	1		-				2
1.2			1.		2				3
0.7		1	1			1			3
0.6				1					i
0.5 0.4									
0-2									
LESS		_							
TOTAL		2	3	1	2	1			9
NZ	MANEU	VERS V	S MU	BY MISS.	SEG.	ASCENT,	ALT.	1000, C	T/S LESS
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4 2.2									
2.0									
1.8									
1.7 1.6									
1.5									
1.4									
1.3 1.2			•						
0.8		3	1	1		2			7
0.7						3			3
0.6 0.5						_			
0.5									
0.2									
LESS		_		_					
TOTAL		3	1	1		5			10

				TABLE X	XIX,	contd.			
NZ	MANEUV	ERS VS	MU	BY MISS.	SEG.	ASCENT.	ALT.	1000.	T/S 0.06
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
2.0 1.8									
1.7									
1.6									
1.5									
1.4		1							1
1.3			1	1					1 2
1.2		4	1	1 2	2	1			10
0.8									
0.7	2				3	2 1			7
0.6						1			1
0.5 0.4									
0.2									
LESS									
TOTAL	2	5	2	3	5	4			21
NZ	MANEUV	ERS VS	۴U	BY MISS.	SEG.	ASCENT.	ALT.	1000. C	T/S 0.09
	LESS	0.00	0.05	0.10					
2.4	CE 33	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.2									
2.0									
1.8									
1.7									
1.6									
1.5									
1.4									
1.4 1.3 1.2				2	2	1			_
0_ A				•	2	1			5
0.8 0.7			1		1				2
0.6			•		•				•
0.5									
0.4									
0.2									
LESS				_	_	_			_
TOTAL			ι	2	3	1			7

				TABLE X	XIX,	contd.			
		<del></del>							
NZ	MANEU	VERS VS	MU	BY MISS.	SEG.	ASCENT.	ALT.	2000, C	T/S LESS
21 7	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6									
1.4		1	1	1					1 3
0.8		•	•						
0.7 0.6 0.5 0.4 0.2				1	1				2
LESS TOTAL		1	2	2	1				6
NZ	MANEU	VERS VS	ΜU	BY MISS.	SEG.	ASCENT,	ALT.	20C0, C	T/S 0.06
2.4 2.2 2.0	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
1.8 1.7 1.6 1.5 1.4 1.3		1				1			1
1.3		i					1		1 2 17
1.2 0.8		4	2	2	4	5	J		17
0.7		1		3	8	16			28
0.6 0.5 0.4				3 2	-		1		28 2 1
0.2 LESS TOTAL		7	2	7	12	22	2		52

```
TABLE XXIX, contd.
    NZ MANEUVERS VS MU BY MISS. SEG. ASCENT, ALT. 2000, CT/S 0.09
       LESS
             0.CO
                     0.05 0.10
                                   0.15
                                          0.20
                                                 0.25
                                                        0.30 TOTAL
  2.4
  2.2
 2.0
  1.8
  1.7
 1.5
  1.4
  1.3
                               1
                                                                  1
 0.8
 0.7
                               ı
                                                                  1
 0.6
 0.5
 0.4
 0.2
LESS
TOTAL
                               2
                                                                  2
    NZ MANEUVERS VS MU BY MISS. SEG. ASCENT, ALT. 5000, CT/S 0.06
       LESS
              0.CO
                     0.05
                            0.10
                                   0.15
                                          0.20
                                                0.25
                                                       0.30 TOTAL
 2.4
 2.2
 2.0
 1.8
 1.7
 1.6
 1.5
 1.3
 1.2
 0.8
 0.7
                                                                 ı
 0.6
 0.5
 0.4
 0.2
LESS
TUTAL
                                             ı
                                                                 1
```

				TABLE X	XIX,	contd.			
NZ	MANEUV	ERS VS	MU	BY MISS.	SEG.	MANUVR,	ALT.	LESS, C	T/S 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
1.8									
1.7									
1.6									
1.5 1.4									
1.3		ŀ		1					2
1.2		1		2	3				6
0.8 0.7				•	-	•	•		
0.6				2	3	3	1		9
0.5									
0.4									
0.2 LESS									
TOTAL		2		5	ó	3	1		17
13172		•			J	,	•		• •
NZ	MANEUVE	ERS VS	PU	BY MISS.	SEG.	MANUVR.	Al T.	LESS. C	T/S 0 00
						~~~~	25.	CC331 C	1/3 0.09
2.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TUTAL
2.2									
2.0									
1.8									
1.7									
1.6 1.5									
1.4									
1.3									
1.2 0.8									
0.7									
0.6						1			1
0.5						Ī			•
0•4 0•2									
LESS									
TOTAL						1			1

				TABLE >	XIX,	contd.			
			<del></del>						
NZ	MANEUV	ERS VS	۲U	BY MISS.	SEG.	MANUVR.	ALT.	10C0, C	T/S 0.06
2.4	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C-30	TOTAL
2.2 2.0 1.8 1.7 1.6									
1.4	1		1 2		1	1			1
1.2			1	2	4	•			5 7
0.7		1		1	1	2	1		6
0.5 0.4 0.2 LāSS									
TOTAL	1	ı	4	3	6	3	1		19
NZ	MANEUVI	ERS VS	MU	BY MISS.	SEG.	MANUVR,	ALT.	1000, C	r/S 0.09
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7 0.6 0.5 0.4	1	1							1
LESS TOTAL	1	1							2

			T	ABLE X	ΚΙΧ, «	contd.			
NZ	<b>MYNENA</b>	ERS VS	MU	BY MISS.	SEG.	MANUVR,	ALT.	2000, C1	r/s 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TUTAL
2.4 2.2 2.0 1.8 1.7									
1.5						_	2		2
1.3		1	2	1	1	2 1			3 9
l • 2 0 • 8	1	i	1	6	19	12			40
0.7 0.6 0.5 0.4 0.2	2		3	1	4	2	4		13
LESS TOTAL	3	2	6	8	32	17	6		74
NZ	PANEUVE	RS VS	<b>PU</b> 8	BY MISS.	SEG.	MANUVR,	ALT. S	50CO, CT.	/S 0.06
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4	LESS	0.00	0.05	0.10	C.15	0.20	0.25	C.30	TOTAL
0.8 0.7 0.6 0.5 0.4 0.2			1	2					1 2
LESS TOTAL			1	2					3

				TABLE	XXIX,	contd.			
NZ	MANEU	IVERS	vs Pu	BY MISS.	SEG.	DESCNT,	ALT.	LESS, CT.	/S LESS
11	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
2.0 1.8									
1.7									
1.6									
1.5									
1.4									
1.3									
1.2				2	3				5
0.8									
0.7				1			1		2
0.6 0.5									
0.4									
0.2									
LESS									
TOTAL				3	3		1		7
				-			•		•
N.7	MANEU	VERS V	S MU	AV NICE		Decemb			
"""			3 MU	BY MISS.	260.	DESCRI.	ALI.	LESS, C1/	\$ 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30 T	OTAL
2.4									
2.2 2.0									
1.8									
1.7									
1.6									
1.5									
1.4									
1.3									
1.2			1	1	4	2			8
0.8 0.7			•	•	_	_			
0.6			1	1	2	3			7 1
0.5						ı			1
0.4									
0.2									
LESS									
TOTAL			2	2	6	6			16

			Т	ABLE XX	IX, c	ontd.			
				1.F					<del></del>
NZ	MANEU	VERS V	S PU	BY MISS.	SFG.	DESCNT.	ALT.	1000, CT/	S 0.09
	LESS	0.00	0.05	0.10	0.15	C.20	0.25	C.30 T	DTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									
1.3				4	1				1
0.8				7	•				8
0.7 0.6 0.5 0.4 0.2 LESS					3	3			6
TOTAL				4	8	3			15
NZ	MANEUV	EKS VS	MU	BY MISS.	SEG.	DESCNT,	ALT.	20C0, CT/S	LESS
2.4 2.2 2.0 1.8 1.7 1.6 1.5	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30 TO	TAL
1.3									
1.2					1	3	1		5
0.7 0.6 0.5 0.4 0.2		1			1	5 1	1		8
LESS TOTAL		1			2	9	2		14

				TABLE >	XXIX,	contd.			
NZ	MANEU	VERS V	S MU	BY MISS.	SEG.	DESCNT:	ALT.	2000, 0	T/S 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
2.4						0020	0000		TOTAL
2.2									
2.0									
1.8									
1.6									
1.5									
1.4									
1.3		1		1	1				3
1.2		2	1	ī	15		2		31
0.8							_		
0.7		1	1		17	10	2		31
0.6					4	5			9 1
0.5					1				1
0.2									
LESS									
TOTAL		4	2	2	38	25	4		75
NZ	MANEUV	ERS VS	MU	BY MISS.	SEG.	DESCNT,	ALT.	2000, C1	7/5 0.09
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
2.0									
1.7									
1.6									
1.4									
1.3				1 2	1				2 5
1.2				2	3				5
0.8					•				•
0.7					1				1
0.6									
0.4									
0.2									
LESS									
OTAL				3	5				8

			]	ABLE X	XIX,	contd.		entered to the special angles of the special	
NZ	MANEU	VERS VS	MU	BY MISS.	SEG.	DESCNT.	ALT.	10CO, CT/	S LESS
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	C.30 TO	TAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									- · · · -
1.3 1.2 0.8			1	1	5	1			8
0.7 0.6 0.5 0.4 0.2		1			6	3 2	1		11 2
LESS TOTAL		1	ı	1	11	6	1		21
NZ	MANEUV	VERS VS	۲U	BY MISS.	SEG.	DESCNT.	ALT.	1000, CT/S	0.06
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30 TO	TAL
1.3	1	2	3	3	13	8			1 29
0.8 0.7 0.6 0.5 0.4 0.2	2	1	1	1	8	4	1		18
LESS TOTAL	3	3	4	4	24	12	2		52

				TABLE	XXIX	, contd.			
NZ	MANEUN	/ERS	VS #U	BY MISS.	SEG.	DESCNT,	ALT.	5000, C	T/S 0.09
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5									
1.2 0.8 0.7 0.6 0.5					1 2				1 2
0.2 LESS TOTAL					3				3
NZ	MANEU	VERS	VS MU	BY MISS	. SEG.	STEADY,	ALT.	LESS, (	T/S LESS
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
1.3 1.2 0.8 0.7 0.6 0.5		1	Ĺ		ı	6	1		6 7
U • 🖜									
0.2 LESS TOTAL		1	1		1	8	2		13

			T	ABLE X	XIX,	contd.			
								** *** . * . * . * . * . * . * . * . *	
NZ	MANEU	VERS VS	S MU	BY MISS.	SEG.	STEADY,	ALT.	LESS,	CT/S 0.06
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.0									
1.8									
1.6									
1.5									
1.4						•			
1.2		5	ı	3	2 11	3 18	3		5 4 l
0.8	_						_		~ .
0.7	1	6	1		8	17 2			35
0.5						2			2
0.4									
LESS									
TOTAL	1	11	2	3	21	42	3		83
TIME	5.5	279.7	47.1	47.0	172.0	192.3	101.3	0.8	845.8
NZ	MANEUV	ERS VS	MU E	BY MISS.	SEG.	STEADY,	ALT. L	.ESS, C1	/5 0.09
	LESS	0 • CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.0									
1.8									
1.6									
1.5									
1.4									
1.2				1	3	1	1		6
0.8					2				2
0.7 0.6					2				2
0.5									
0.4 0.2									
LESS									
TOTAL				1	5	1	1		8
TIME	0.5	36.8	2.9	7.5	45.8	27.1	32.0	0.	152.6

	·		Т	ABLE XX	IX, c	ontd.				
N.Z	MANEU	VERS V	S MU	BY MISS.	SEG.	STEADY,	ALT.	1000,	CT/S LE	SS
	LESS	0.00	0.05				0.25			
2.4 2.2 2.0 1.8 1.7 1.6 1.5		0.00	0.03	0.10	0.13	0.20	0.23	0.30	TUTAL	
1.3				1	8	1 6			1 15	
0.6 0.7 0.6 0.5 0.4 0.2					5	5	1		10	
LESS TOTAL				1	13	12	1		27	
TIME	0.8	14.7	9.1	8.7	51.8	51.7	2.2	0.	138.9	
ΝZ	MANEU	VERS VS	. MU	BY MISS.	SEG.	STEADY,	ALT.	2000,	CT/S LES	SS
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL	
1.6 1.5 1.4 1.3 1.2 0.8					1	2			3	
0.6 0.5 0.4 0.2					1	4	1		6	
CESS					2	6	2		10	
IME	0.	9.0	1.5	1.4	9.0	46.1	8.5	1.4	76.9	

			Т	ABLE X	XIX, d	ontd.			
N7	MANELL	VERS VS	۴U	DV MICC	556	CTEANY	AL T	2000	CT/S 0.06
									0.00
2.4 2.2 2.0 1.8 1.7	LESS	<b>0.C0</b>	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
1.5		1							1
1.3		•			2	2	4		8
1.2		4	1	3	25	62	28	1	124
0.8	1	5	2	3	17	47	17	2	94
0.6	•	,		1	2	10	3	2	16
0.5					1	1	_		2
0.4 0.2 LESS		1							1
TOTAL	1	11	3	7	47	122	52	3	246
TIME	22.8	274.6	43.4	37.3	309.3	687.3	227.3	4.8	1606.9
NZ	MANEU	VERS VS	MU	BY MISS.	SEG.	STEACY,	ALT.	20CO, C	T/S 0.09
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4 2.2 2.0 1.8 1.7 1.6 1.5 1.4					3	15			18
0.8									
0.7		1	2		8	7 1	1		19 1
0.5 0.4 0.2 LESS									
TOTAL		1	2		11	23	1		38
TIME	0.	51.0	14.9	19.9	125.0	309-1	90.6	0.	610.5

			•	TABLE X	XIX,	contd.			
NZ	MANEU	VERS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	1000,	:T/S 0.06
2.4 2.2 2.0 1.8 1.7	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
1.6 1.5 1.4 1.3 1.2 0.8		3 8	3	2	15	3 3 25	1 8		4 6 6l
0.8 0.7 0.6 0.5 0.4 0.2		8 2	ı	4	7	18 2 1	6 2		44 7 1
LESS TOTAL		21	4	6	23	52	17		123
TIME	9.8	295.6	37.6	55.5	217.8	271.9	205.9	0.	1094.2
NZ	MANEU	IVERS VS	MU	BY MISS.	SEG.	STEADY,	ALT.	1000, (	:T/S 0.09
2.4 2.2 2.0 1.8 1.7 1.6	LESS	0.00	0.05	0.10	0.15	0.20	0.25	C.30	TOTAL
1.4 1.3 1.2				1	7	1			112
0.8 0.7 0.6 0.5 0.4		2		_	3	4			9
LESS TOTAL		2		1	10	9			22
TIME	2.0	72.5	13.6	17.4	69.9	159.4	25.1	0.	359.8

TABLE XXX

Maneuver  $n_z$  Versus  $\mu$  by

Mission Segment

NZ	MANEU	ERS VS	MU	BY MISS.	SEG.	ASCENT			
	LESS	0.CO	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
2.0 1.8									
1.7									
1.6									
1.5						1	1		2
1.4	1	2				•	•		3
1.3		4	3	1		ı	1		10
1.2	1	15	7	9	10	10	_		52
0.8									
0.7	2	3	3	6	14	28			56
0.6 0.5				3		1	•		4
0.4							1		l
0.2									
LESS									
TOTAL	4	24	13	19	24	41	3		128
NZ	MANEUV	ERS VS	PU	BY MISS.	SEG.	MANUVR			
	LESS	0 (0	0.05	0.10	0 15				
2.4		0.00	0.07		0.15	0.20	0.25	0.30	TOTAL
		0.00	0.07	00	0.15	0.20	0.25	0.30	TOTAL
2.2		0.00	0.07		0.15	0.20	0.25	0.30	TOTAL
2.0		0.00	0.07		0.15	0.20	0.25	0.30	TOTAL
2.0 1.8		0.00	0.07		0.15	0.20	0.25	0.30	TOTAL
2.0 1.8 1.7		0.00	0.07		0.15	0.20	0.25	0.30	TOTAL
2.0 1.8					0.13	0.20		0.30	
2.0 1.8 1.7 1.6 1.5	1		1				0.25	0.30	2
2.0 1.8 1.7 1.6 1.5 1.4	1	3	1 4	2	1 5			0.30	2 5
2.0 1.8 1.7 1.6 1.5 1.4 1.3					1			0.30	2
2.0 1.8 1.7 1.6 1.5 1.4 1.3	1	3 2	1 4 2	2 10	1 5 26	2 2 12	2	0.30	2 5 17 53
2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8	1	3	1 4	2 10	1 5 26	2 2 12		0.30	2 5 17 53
2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7	1	3 2	1 4 2	2	1 5		2	0.30	2 5 17 53
2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7 0.6	1	3 2	1 4 2	2 10	1 5 26	2 2 12	2	0.30	2 5 17 53
2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7 0.6 0.5	1	3 2	1 4 2	2 10	1 5 26	2 2 12	2	0.30	2 5 17 53
2.0 1.8 1.7 1.6 1.5 1.4 1.3 1.2 0.8 0.7 0.6	1	3 2	1 4 2	2 10	1 5 26	2 2 12	2	0.30	2 5 17 53

			TA	BLE X	XX, co	ntd.			
NZ	MANE	JVERS V	S MU	BY MISS	. SEG.	DESCNT			
2.4	LESS	0.CO	0.05	0.10	0-15	0.20	0.25	0.30	TOTAL
2.2 2.0 1.8 1.7 1.6 1.5 1.4	ı	ı		2	4				8
1.2	i	5	6	14	50	24	3		103
0.7	2	5	3	4	40	28	6		88
0.6 0.5 0.4 0.2 LESS					9 1	9	1		19
TOTAL	4	11	9	20	104	61	10		219
2.4 2.2 2.0 1.8 1.7 1.6	MANEU LESS	0.00	0.05	O.10		0.20	0.25	0.30	TOTAL
1.3		1 3 18	6	11	4 74	3 10 135	1 4 41	1	5 21 286
0.8 0.7 0.6 0.5 0.4 0.2	5	22 2 1	6	7	51 3 1	110 15 2	26 7	2	226 28 3 1
LESS	2	47	12	19	133	275	79	3	570
OTAL	•								

## TABLE XXXI Maneuver n<sub>z</sub> Versus Airspeed by Mission Segment

									==							
Z PAN	MEUNENS	V:	. VEL.	BA MIZ	s. sec.	ASCENT										
LES	\$ \$	40	60	65	70	75	80	85	90	95	100	109	110	115	120	101
									ı					ı		
	7	ı							1				1			
2	23	•	3	ı	5	• •	. 14	•	1	. 2	<b>?</b>		1			•
		4	3	4	3	4	•	13			, 1		1			
		2	ı						ι				1			
•	• 1	15	7	5	5	7		17	' н	9	) 1	2	, ,	ı		1.7
Z MAN	LUVERS	۷ ۵	VEL.	HY PIS	S. SEG.	MANUVR								•		
LLS		40	60	65	70		нС	85	90	95	100	105	110			***
		•	-	-		.,		",	70	•,	100	103	110	115	170	TOTA
	2									1	1	5				
	H 5	i 6	1	5	2	2	i	9	1 2		ı					ı
			•	,			_		_	-						5
	2	3		ı	1	3	4	•	· ·	5	ı		į	7		1
																•
2.	2 (	13	4	6	12	13	12	13	5	4	4	2	,	2		11
																• •
		-														
	-U +F = S	4.5			. 5+6.			41.6	21	0.6	ıcc	105	110	115	120	TOTAL
LESS	s •	Ü	• C	55	10	15	+ C	85	9(	95	100	165	411.	.,,	120	1012
	ı							2	ı			1				_
3	3				.1	1	2	1	3	2 34	31	25	6	2 10	2	28
24	•	đ	4	12	13	2.2	3C	35,	31							
30		!	1	6	14	18	16	20 3	25 2	40	18	15	7	6	3	22
i		ı			•	•	i	,	i	•	ì	·	•	•	•	
1	i															
			5	18	28	42	51	61	63	90	60	46	14	19	6	570
		6	7	10		76		٠.	- '				-	-	-	
61						296.7				. 16 -				45.6		5206.

<u>.</u>		<del></del>	<del></del>		T	ABI	LE X	XXI,	cor	ntd.				<del></del> :		
N	Z MANEUVI								1021							
2.4 2.2 2.0 1.0 1.7 1.6 1.5	LESS	40	60	65	70	75	•0	•5	<b>◆</b> 0	•5	100	105	110	115	120	TOTA
1.3	15	i.	1	7	12	17	3 14	•	•	5	ı		1		1	10
0.8 0.7 0.6 0.5 0.4	10	•	i	•	1 2 1	17	14	•	2	5 1	3 2	2	,		1	ì
LESS	24	16		11	23	36	34	20	19	11	•	2	4	ı	2	21

			Mar		XXXII				
	NZ MA	NEU VER S	VS	MU CO	PPGSITE				
	LESS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	TOTAL
2.4									
2.2									
2.0									
1.8									
1.7									
1.6						•	•		
1.5	2	2	,		•	1 5 13	3		4
1.4	2	3 11	1	5	1 13	, ,	1 5		13 56
1.2	2 2 3	40	1 7 21	44	160	181	44	1	
0.8	,	40	21	44	100	101	44	Ţ	494
0.7	4	21	16	20	113	173	38	2	399
0.6	6 2	31 2	10	7	16	26		2	61
0.5	2	2		•	2	2	8 1		5
0.4		ı			•	2			1
0.2		•							
LESS									
OTAL	15	88	45	76	305	401	100	3	1033

					Mar			LE X		II Air	spee	d				
2.4 2.2 2.C 1.6	7 MANEUV LESS	ER <b>S</b> #5	60 VELCCII	65	PCSITE 70	75	<b>e</b> C	85	96	75	ıcc	105	110	115	120	TOTAL
1.7 1.6 1.5 1.4 1.3	6 2C 64	3 23	2	25	4 33	3	1 6 54	2 1 54	1 1 5	1 2 42	1 5 33	2 1 2 26	i 7	1 2 11	3	4 13 56 494
0.8 0.7 0.6 0.5 0.4	53 4 1	18	;	14	25 5 1	62	3ê 5 1	46	3e 6 1	54	23 8 1	18	13 1 1	8	i	399 61
LESS	148	eG	25	•0	66	100	105	111	95	104	71	52	23	53		103

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## 13. ABSTRACT

The United States Army Aviation Materiel Laboratories, Fort Eustis, Virginia, has conducted a flight loads investigation program for several operational aircraft. The aircraft involved in the program were the OV-1A, CH-47A, UH-1B, and CH-54A. This report deals only with the analysis of the 110.4 hours of CH-54A Skycrane data. Century 409B oscillograph recorders were used to collect the parameters measured, including airspeed, altitude, vertical acceleration at center of gravity, main rotor rpm, longitudinal cyclic stick position, collective stick position, outside air temperature, torque on each engine, and gas producer rpm on each engine. Barometric pressure and takeoff-and-landing gross weight estimates were also recorded as supplemental information. The flight data were divided into four categories by mission: ascent, maneuver, descent, and steady state. The aircraft were performing their normal mission functions during the period in which the data were collected.

Time history tables, histograms, peak counts, and exceedance curves were generated from the data. As a result of this study, designers now have a limited sample of conditions experienced by four CH-54A aircraft in the field.

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